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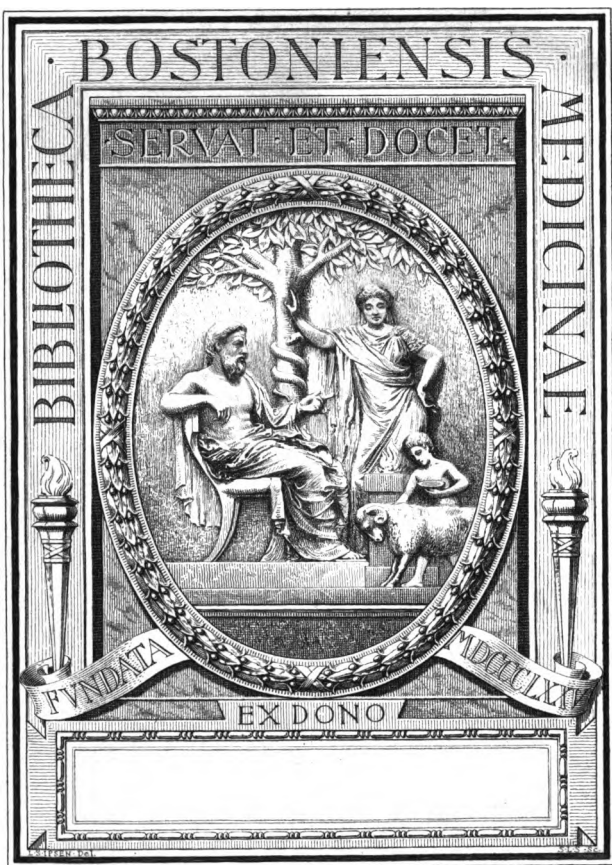
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Alimentary Review



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The Alimentary Review.

**A Medical Journal Devoted Exclusively to the Consideration of
Food, Diet and Digestion; Comprising a Summary of the
Latest Scientific Investigations on the Subject of
Artificial Digestives and the Importance
of Environment in Determining the
Enzymotic Action of Vegetable
and Animal Ferments.**

Vol. I.

October, 1901.

No. I.

JERSEY CITY, N. J.

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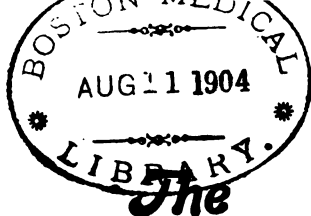
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The **Alimentary Review.**

A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

VOL. I.

JERSEY CITY, N. J., OCT., 1901.

No. 1.

ORIGINAL ESSAY.

CARNIVOROUS PLANTS.

"That a plant and an animal should pour forth the same, or nearly the same complex secretion, adapted for the same purpose of digestion, is a new and wonderful fact in physiology."—*Darwin*.

Although the above statement was made and recorded by the world's greatest naturalist more than a quarter of a century ago, yet it appears to have shared the common fate of most discoveries made before their time, and to have been in the main forgotten. It has always been considered natural and normal that animals should feed upon plants, but the reverse has generally been looked upon as an absurdity. Yet the adage, "*Natura non agit saltatim*," has its application even here. For it is the naturalist, rather than nature, who has drawn hard and fast lines everywhere—who marks out abrupt boundaries where she herself shades off with gradations.

"However opposite the parts," says Prof. Asa Gray, "which ani-

mals and vegetables play in the economy of the world as the two opposed kingdoms of organic nature, it is becoming more and more obvious that they are not only two contiguous kingdoms, but are parts of one whole—antithetical and complementary to each other, indeed; but such 'thin partitions do the bounds divide' that no definitions yet framed hold good without exception."

In his "Insectivorous Plants," published in London, 1875, Darwin first established the fact of a true plant digestion, as shown by his experiments with the *drosera*—or sundew. He demonstrated the fact that plants have glands which secrete a digestive fluid capable of dissolving nitrogenous compounds. He showed that they secrete a digestive liquid which dissolves flies, and even raw beef; that this liquid had an acid reaction, and was analogous to the gastric juice of animals. He said: "There is a remarkable accordance in the power of digestion between the gastric juice of animals,

with its pepsin and H.Cl, and the secretion of drosera, with its ferment and acid belonging to the acetic series."

The droseras, or sundews, to which Darwin refers, are widely diffused over the world and numerous in species. The two, however, whose captivating habits have attracted attention abound in bogs all around the northern hemisphere. That flies were caught by them was long a matter of common observation; but this was thought to be purely accidental. These little plants spread out from the root a circle of small leaves, the upper face of which especially is beset and the margin fringed with stout bristles (or what seems to be such, although the structure is more complex), tipped by a secreting gland, which produces, while in vigorous state, a globule of clear liquid like a drop of dew—whence the name of the plant. "One expects these seeming dew-drops," says Prof. Gray, "to be dissipated by the morning sun; but they remain unaffected. A touch shows that the glistening drops are glutinous and extremely tenacious, as flies learn to their cost on alighting, perhaps to sip the tempting liquid, which acts first as a decoy and then like bird-lime. A small fly is held so fast, and in its struggles comes in contact with so many of these glutinous globules, that it seldom escapes."

Roth, a keen German botanist of the eighteenth century, was the first to detect, or at least to record the telling fact that not only the bristles which the unfortunate insect had come in contact with,

but also the surrounding rows, before widely spreading, *curved inward one by one*, although they had not been touched, so as within a few hours to press their glutinous tips likewise against the body of the captive insect—thus doubling or quadrupling the bonds of the victim and (as we may now suspect) the surfaces through which some part of the animal substance may be imbibed. Roth even observed that the disk of the drosera-leaf itself often became concave and enveloped the prey. Darwin not only confirmed all of Roth's observations as to the incurving of the bristles toward and upon an insect entangled on any part of the disk of the leaf, but also found that they responded similarly to a bit of muscle or other animal substance, while to any particles of inorganic matter they were nearly indifferent. To minute fragments of carbonate of ammonia, however, they were more responsive. The main point to be observed in this connection is that the insects and bits of raw beef, although sometimes rejected were generally acted upon in the same manner, i. e., closed down upon tightly, slavered with the liquid, *dissolved*, and, in a few hours, completely *absorbed*; so that, in fine, the fluid may well be said to be analogous to the gastric juice of animals, dissolving its prey and rendering it fit for absorption by the leaf. Many leaves remain inactive or slowly die away after one meal; others reopen for a second and perhaps even a third capture, and are at least capable of digesting a second meal.

Another curious insect-eating plant is what is commonly called the "vegetable butcher," to which botanists have given the name of *dionæa muscipula*, better known as the "Venus Fly-trap." The plant steals along close to the ground, literally extending its jaws for the capture of such insects—flies, particularly,—as may venture within its reach. Not one gaping mouth, but thousands, does it hold ready for welcoming its victims, each leaf being so constructed as to form a trap.

These traps are somewhat the shape of clam shells, with rows of long teeth or bristles at the edges, tipped with glands secreting a sweetish substance, which attracts flies. Unsuspectingly the insect walks in, and thereupon comes in contact with a half dozen microscopic hairs which grow inside of the clam shell and serve the plant as feelers. The instant these are touched the two valves of the leaf close with a snap and imprison the fly, whose exit is prevented by the teeth.

Naturalists assert that this plant exhibits an intelligence more nearly approaching that of animals than is displayed by any other vegetable species. It prepares a lure for a definite purpose, and is notified of the presence of the prey by what corresponds to a system of nerves. Thereupon it springs the trap and forthwith proceeds to devour the luckless prisoner, which is first crushed to death between the toothed jaws *and then absorbed by a process of digestion*, this last requiring several hours. The *dionæa* is a true carnivorous plant.

Mr. Darwin has shown by his experiments with the above plant that, by a prick with a sharp lancet at a certain point, he has been able to paralyze one-half of the leaf-trap, so that it remained motionless under the stimulus to which the other half responded. Such high and sensitive organization entails corresponding ailments; and Mr. Canby, another observer, has told us that he gave to one of his *dionæa* subjects a fatal dyspepsia by feeding it with cheese; and under Mr. Darwin's hands another suffers from *paraplegia*.

That the captured insects, therefore, were in some way "made subservient to the nourishment of the plant" was conjectured from the first, and investigators were not long in finding that the fluid secreted was of mucilaginous consistence, which acted as a solvent—the insects being consumed by it. The points which have finally been settled upon are: 1. That the fluid is always poured out around the captured insect in due time, "if the leaf is in good condition and the prey suitable;" 2. That it comes from the leaf itself, and not from the decomposing insect; 3. That bits of raw beef were acted upon in the same manner; 4. That the fluid was analogous to the gastric juice of animals, inasmuch as it dissolves its prey and prepares it for absorption into the body of the plant.

The phenomena of plant digestion, says one writer, may become so far instructive as to furnish the key to digestion as it occurs in animal life. "The seed of the plant," says Dr. Jungk, "con-

tains a store of starch and albumen, for the most part insoluble in water, and requiring, before they can be used to nourish the plant during the first period of its growth, to be so acted upon as to become soluble. The development of the digestive bodies called ferments is among the earliest incidents of germination; and if the seed be examined when it begins to show the first signs of this vital change, it is found that *a part of both* the starch and the albuminoids have been transformed into soluble matter (the starch into dextrine and maltose, the albuminoids into peptones), easily diffusible and capable of passing into every part of the growing organism. The starch and albuminoids are thus slowly changed and used up in forming the leaf, stalk and rootlets of the young plant. We thus perceive how closely related in their phenomena are the digestive changes which occur in the food of both plants and animals. When eaten, the starchy constituents of seeds are acted upon by salivary diastase and thus transformed into maltose and dextrine, these being precisely the changes produced during germination. The gluten and other albuminoid constituents of grain are transformed into peptones by the digestive powers of the stomach, just as they are changed by the peptonizing ferment that is developed during germination. All the transformations which are effected by the action of the saliva, the gastric juice, and the pancreatic secretion, find true counterparts in the diastasic digestive processes of vegetable life."

It has long been known in a general way that the juice of a pineapple possesses a digestive principle, and a South America investigator conceived and developed a method of utilizing it. Its use, however, is confined to the predigestion of lean beef, which is by a certain process prepared in various forms for the market. One of the most powerful vegetable digestives, yet discovered, is the ferment Caroid, obtained from the juices of the Carica Papaya, or pawpaw tree. This curious tree abounds in a milky, bitter juice, which is remarkable as containing nearly all the digestive ferments found in the animal economy, proteolytic, amylolytic, fat-splitting and curdling, which fact might be expected, since the chemical composition of its fruit is closely akin to that of the flesh of animals, being largely albuminous.

Vanquelin compares the juice to blood deprived of its coloring material. Endlicher says that a few drops of this juice mixed with water will in a few moments render recently killed or old tough meat tender, and that the same effect is produced by wrapping a piece of meat in a leaf of the tree and keeping it thus over night.

—:o:—

It is said that a raw egg swallowed at once when a fishbone is caught in the throat beyond the reach of the finger will dislodge the bone and carry it down.—*Ex.*

A double wedding might be properly called a four-in-hand tie.—*Ex.*

EDITORIALS.

OUR AIM AND PURPOSE.

A careful examination of the more than two hundred medical journals published in this country will convince even the most optimistic believer in medical progress that the subject of dietetics and digestion (especially the latter field in its broader aspects) is not receiving that attention at the hands of the profession which its importance demands. While it seems to be recognized in a general way that many of the ills of mankind may be directly attributable to dietary errors, and that the American people in particular are prone to indulge in excesses at the table and have fairly established their right to the title of "a gouty people," or "nation of dyspeptics," yet there has been no apparent effort made on the part of the literary organs of the profession to direct the attention of its members to the advances made in recent times in our knowledge of the metabolism of foods and the action of the digestive ferments,—and especially the significance to be attached to a proper application of the latter as therapeutic agents in actual practice. It seems to us, therefore, that a fruitful theme for discussion is that which relates to *the phenomena of digestion*, and it is upon this important topic

that we wish to interest the readers of THE ALIMENTARY REVIEW.

We desire to state at the outset, that, in presenting this journal to the notice of the profession, it is our purpose to impress upon the minds of physicians the necessity of a clearer insight into the nature of the vital processes governing that portion of the organic world, whose existence has always been recognized as essential to animal life (i. e., as food), but an intimate acquaintance with the biology of which has hitherto been considered foreign to medical requirements. We refer to the biochemistry of the vegetable kingdom—to the growth and metabolism of plants. How many of us, for instance, have realized that digestion is a function of plants as well as of animals?—that it is a universal process in the organic world?—that cellular growth in plants and animals is the same?—that the ferment unit, termed an "enzyme," is a secretion of the protoplasmic cells of both?

Recent investigations have shown beyond dispute, that digestion is *the universal property of living things*. Although the digestive secretions and their ferments have become specialized in the human economy, each being dependent upon the other and upon its own physiological environment; yet, the products of the action of ferments, in both great kingdoms, are

known to be substantially identical, the differences existing only in their behavior under varying conditions,—i. e., while one (the animal ferment) is chemically restricted to a special set of conditions, the other (the vegetable ferment) is not. Such facts as these have led certain investigators to search the vegetable world for a digestive ferment of high potency, possessing a more diversified and more extended range of activity than that of either of the animal products—pepsin or pancreatin, and it is to demonstrate to the profession, that a vegetable enzyme of this character has been discovered (one whose working environment is unconditional), that our editorial pages will be principally devoted.

FROM COVER TO COVER.

The REVIEW will be issued early each month, in the same form and size as the present copy (48 pages), and will be mailed to every English speaking physician of the world. Literature relating to the subject matter of which we treat will be carefully searched and the gist of such writings given in brief but comprehensive form. Attention will be given to the reports of scientific experiments relative to the composition and digestibility of food materials, and especially to the comparative value

of artificial digestives (in their action upon the same) from a therapeutic standpoint. Clinical reports of cases will be cited, comprising various gastric and intestinal disorders, in which the vegetable ferment, Caroid, has been used in the treatment, either alone or in combination, illustrating its enzymotic action, its method of administration, dosage, etc., and, in certain conditions, its power to remove by absorption the products of inflammatory processes. Two or more selected articles, written by well-known authors, will be published each month, presenting their experience in the use of artificial digestives, and their opinions concerning the relative merits of animal and vegetable ferments as obtained in actual practice.

A brief original essay will appear in each issue, containing a summary of the latest intelligence on the subject of digestives and digestion. Critical reviews of the leading articles and text-books, treating upon alimentary topics, will be given from time to time, especial attention being paid to such works (or that portion of each) as relate to the disorders of an outraged nutritive system, and the requirements of a suitable therapeutic agent for their relief. A column of "Items and Notes" will be given, in which will be furnished extracts from other journals,

touching upon various matters of interest connected with our subject.

It is intended that our Correspondence department shall be one of the principal features of the REVIEW, and for the better accomplishment of this purpose we invite the co-operation of our readers, who may choose to favor us with an expression of their views concerning the action of artificial digestives, or furnish us with the outlines of cases which have occurred in their practice and in which these agents have been used in the treatment. It is from the interchange of opinions, obtained in this way, that we believe the discussion of this subject will attract greater interest and wider attention, and, at the same time, lead to the consideration of many practical points which would otherwise escape our notice. Queries regarding the action of the vegetable ferment, Caroid, plain or in combination with other remedial agents; its therapeutic application in the form of powder, tablet or essence; its method of administration, dosage, etc., will receive prompt attention at the hands of the editor of this column, and physicians are cordially invited to report their experiences in the use of this agent.

All family trees are more or less shady.—*Ex.*

PREPARATIONS OF CARICA PAPAYA.

In "A Manual of Therapeutics," by T. M. Balliet, M. D., Professor of Materia Medica and Therapeutics in Dartmouth Medical College; Professor of Therapeutics in the Medical Institute of Philadelphia; Adjunct Professor of Therapeutics in the University of Pennsylvania (Assistant to Prof. H. C. Wood, in the last named institution)—edition of 1900, we note the following extract concerning the relative digestive power of various preparations of the ferment obtained from the plant *Carica Papaya*:

"The difference between Papoid, Caroid, etc., seems to be one of activity only. All are derived from the same fruit [*Carica Papaya*], and all are supposed to contain the same ferment or ferments. But the experimental results arrived at by Prof. Chittenden seem to indicate that Caroid is both the most active and the most certain. He states that Caroid is far superior to Papoid, etc., in its digestive power on proteid foods in neutral, acid or alkaline solution. Also that two parts of Caroid will digest as much proteid matter in a neutral solution as five parts of Papoid, etc. He further states that in starch digestion the solvent power of Caroid is far greater than that of any similar preparation tested. The same amount of starch solu-

tion, with Caroid, will reach an acromic point to iodine test in five minutes, which will take Papoid two hours, another preparation three hours to digest to a point where the iodine blue does not appear from the reaction of the starch. This shows plainly that Caroid is far more active, in the same quantity, than other preparations of Papaya. Why these substances should be so at variance, though derived from the same fruit, can only be explained by the fact that probably Caroid is a more concentrated extract and therefore contains a greater proportion of the ferment of the fruit than the other two substances."

The explanation offered here by Prof. Balliet, that the difference observed in the action of these ferments is probably due to their relative degrees of concentration, is only partially correct. While it is true they are obtained from the juices of the same plant, yet, at the same time, it must be understood that there are twenty-six known varieties of this plant, some of which possess such corrosive qualities as to unfit them for use, and others yielding ferments so uncertain in action as to be practically worthless. The character of the soil, manner of cultivation, and extent of rain-fall are all important factors in producing plants which yield the best results,

and a knowledge of these facts must be taken into consideration in deciding upon the relative merits of products obtained from different sources. It is a remarkable fact that the Carica Papaya utilizes in its growth, food constituents very similar to those of animals; and that, consequently, its metabolism is aided by the same ferments that assist in the preparation of food for animals. In one direction only do its ferments exhibit weakness, namely—in the fat-splitting ferment. Its shortcomings in this respect, however, are supplied by the use of the plant, Colza, whose germinating food is largely fat, and which yields, as would be expected, a large percentage of fat-splitting ferment; which also has the property of acting in acid, alkaline and neutral solutions. The combined product thus obtained is named "Caroid."

It is believed that in digestive strength, Caroid is vastly superior to any preparation of the vegetable ferments which has thus far appeared. After an exhaustive investigation of the subject, concerning the action of this ferment, Prof. Chittenden published a report [Cf. *American Druggist*, Aug. 25, 1896] in which he says:

- "1. That it is a true soluble digestive ferment of vegetable origin.
2. That it has marked proteolytic action in acid, alkaline and

neutral solutions and in the presence of many chemicals, antiseptic and therapeutic agents.

3. That it has a peculiar softening and disintegrating action on proteids, and that its general proteolytic action is that of a genuine digestive ferment, similar to the ferments of animal origin.

4. That it has amylolytic or starch-dissolving power.

5. That it has a marked rennet-like action upon milk and a pronounced digestive action upon milk casein.

6. That it exerts its peculiar digestive power at a wide range of temperatures.

7. That the ordinary conditions of health and disease in the stomach and intestines are not likely to check its action, while certain possible conditions may accelerate it."

During the past ten years various attempts have been made to present the ferments of the *Carica Papaya* in usable form to the medical profession, but the products offered have fallen far short of representing the possibilities of this combination of enzymes, being open to the serious objections which attend crudeness of manufacture, besides being hygroscopic and far too expensive for practical use; faults which were probably largely incidental to the articles having been treated as a side issue by large manufacturing con-

cerns instead of being made, as it should be, the subject of an exclusive business, and thus insuring for it the prolonged and careful attention the importance of the matter deserves. Caroid is the final result of a prolonged and intelligent study of vegetable ferments and of the various methods employed in isolating and refining them, a work which members of the American Ferment Company were especially well qualified to take up, as their experience with the drug has covered nearly the whole period from its first isolation by Wurtz to the present time.

THE LIMITATION OF ARTIFICIAL DIGESTIVES.

For several years there has been a growing indifference to and distrust of artificial digestives. Later day text-books fail to assign them the important position among therapeutic agents which they once occupied. It is said that they make the stomach "lazy," that the system becomes in time accustomed to their use, so that eventually they lose their effectiveness. Recent stomach analyses have shown [*Cf. Illoway, in N. Y. Med. Jour.*, June 15, 1901; Boardman Reed, in *Med. Rec.*, June 22, 1901; Dujardin-Beaumetz, in *Lecons Clinique de Therapeutique*,] that, in a majority of cases, it is hydrochloric acid that is deficient in

quantity and not pepsin. It is therefore argued that animal pepsin is seldom indicated, and that what is required is H.Cl, to restore chemical conditions essential to pepsin action. The authorities interdict pancreatin in all cases whatsoever, except where there is a total absence of acid secretion. It has been decided by physio-chemists that pancreatin cannot pass through the stomach in active form, inasmuch as the presence of the acid secretions in that organ not only inhibits its action but destroys it altogether.

While it is doubtless true, as above stated, that the animal ferments have been found ineffectual in the treatment of most gastric and intestinal disorders, yet we hope to be enabled to prove that there is still a most important field for the intelligent use of artificial digestives. The theory, that the system in time becomes accustomed to the action of digestives, is applicable to any and all remedies. Common sense and good judgment must be observed in prescribing digestives, as well as in the use of other medicines in the materia medica. We have all tried H.Cl in gastric disturbances. Does it yield satisfactory results? Sometimes it does and sometimes it does not. It is admitted that laboratory methods in studying the stomach conditions are beneficial in a high degree. We may

thus determine whether free hydrochloric acid is present or absent, and whether pepsinogen and various other ferments are present or not. But these tests are by no means as simple and as satisfactory as might be desired. As Dr. McLeod has stated [Cf. his article in the present issue] "there are almost insuperable reasons why these methods cannot be universally adopted in general practice. The average physician has neither the time nor the facilities for such study. Furthermore, the conclusions based on these methods, as to the proper treatment, are so full of detail and cumbersomeness as to render the plan ill adapted for general use. We must, therefore, meet the conditions of maldigestion as we find them—not as we would have them."

When, then, in the rush of our rounds, we are confronted with one of these vexatious cases, the question arises, "How shall we treat it?" The trouble may be due to a deficiency of H.Cl or to an excess of H.Cl; to gastric or to intestinal indigestion; and lastly, to a deficiency of peptic or pancreatic ferments. In actual practice, it is difficult to accurately diagnose which of the above conditions is present, and our first effort should be directed toward the immediate relief of the patient, whatever we may hope to accomplish later. What, then, is the

most rational course to pursue? H.Cl is sometimes effective, but more often it fails. Animal ferments fail for the reasons above given; i. e., the absence or change of the chemical conditions under which they are enabled to act. But these reasons do not apply to an unconditioned ferment of the nature of Caroid, which acts upon food of whatever kind, in neutral, acid or alkaline conditions,—where also a deficiency of H.Cl is rather a benefit than an impediment to its action.

It should be remembered, in this connection, that the function of the stomach is that of a storage or macerating tank. The major portion of the proteids, starches and fats being transmuted unpeptonized into the intestinal canal (where the reaction is alkaline and where Caroid acts as well or better than in acid media), it is obvious that this vegetable ferment, acting as it does throughout the whole digestive tract, is a widely different therapeutic agent than any of the animal ferments. The only condition unfavorable to Caroid action is when there is such excessive acid secretion as to inhibit the action of all ferments, including animal pepsin itself. In such cases, a strong alkali should be given with Caroid.

For reasons above given, it will be seen that, in the average case of maldigestion, Caroid will meet the indications and accomplish

more than any single agent we have. Having produced an effect by the use of this artificial digestive—i. e., having rendered the food fit for absorption—we should consider it only as a step toward the permanent end. In other words, the rules of diet and exercise applicable to the case in charge should be observed; constipation, if it exist, should be relieved; alcoholic liquors and smoking prohibited; disturbances of the nervous system receive attention; condiments and acidulated drinks (if hyperacidity exist) be forbidden; tonics administered, etc., etc. We must still recognize the fact that the chronic invalid can be permanently relieved only by being reconstructed, and that the process must be one of gradual change.

But the question may be asked, "What shall we do with the host of patients who will not observe the hard and fast diet rules laid down for them?" All that can be said in such cases is, that the refractory "high liver" or "drinker" will still derive more benefit from Caroid than from any single agent we can use; that he will be better off with than without it, until his excesses bring him to the condition where diet rules will be obeyed.

Our duty is accomplished when we have made him understand the effect of persistent non-conformity with the prescribed régime.

CORRESPONDENCE DEPARTMENT.

Our readers are cordially invited to make free use of this department. Queries regarding the enzymotic action of vegetable ferments and their use in the treatment of disease—or any other question which comes within the scope of *THE ALIMENTARY REVIEW*—will be cheerfully and promptly answered. We also solicit clinical reports illustrating the action of the vegetable digestive, Caroid, in the treatment of cases, and will be glad to publish the same in this department for the benefit of our readers who may wish to further investigate the subject. Answers to questions of a medical nature will be given only to medical men.

Letters intended for this department should be addressed to "Editor *ALIMENTARY REVIEW*," care of The American Ferment Co., 81 Steuben St., Jersey City, N. J.

SPEEDY RELIEF OBTAINED.

The American Ferment Company.

GENTLEMEN: In your booklet on the uses and action of the vegetable ferments, which you recently mailed to me, I noticed an article written by Dr. E. E. Lewis, of Port Huron, this state. [Cf. Dr. Lewis' article, "Caroid in Intestinal Indigestion," in the present issue.] As I am acquainted with Dr. Lewis and have great respect for his opinion, I was led to adopt some of his suggestions in the treatment of my own case. Two years ago, I was suddenly seized with a form of digestive trouble almost identical in every respect with that of the patient reported by Dr. Lewis. I had consulted specialists in Chicago, and spent some eight or nine weeks in a well-

known sanitarium in Michigan, but had received little benefit. The attack from which I suffered was brought on by drinking two glasses of ice-cold milk on an empty stomach, which inaugurated the most agonizing pain. For months I was tormented with gastric and intestinal fermentation and formation of gas (following the ingestion of food of whatever kind), lasting from one to two hours after each meal.

Two weeks ago, I began to use the tablets prepared according to the same formula recommended by Dr. Lewis, as follows:

℞ Caroid, gr. j.
Charcoal,
Acidi borici, aa gr. iss.
Sacch. lact., q. s.

Sig. Dose. Two tablets to be taken immediately after meals.

I may frankly say that these few tablets have done me more good than all the treatment I had previously received. There is no further distention of the stomach from gas after eating, while the pain and distress which had been so annoying have almost entirely disappeared. In short, the effect is really magical, and I feel encouraged to believe that the tablets will eventually insure a cure in my case. I am not in the habit of endorsing every new remedy which comes to my notice, but I consider that your vegetable ferment is worthy of any physician's endorsement. It has certainly done the deed, as represented, in my case, for which I am really and truly grateful; for I had spared neither time nor money in previously futile endeavors to obtain relief from much suffering, which incapacitated me during the day and deprived me of needed rest at night. I shall be pleased to receive any further literature which you may have on the subject of the "Vegetable Ferments."

Respectfully yours,

J. B. WEAVER, M. D.,

Lansing, Mich., March 1, 1901.
1001 Cor. Main and Logan Sts.

NOTE: From the outlines given in the above case, as well as in that reported by Dr. Lewis, it will be observed that although the usual artificial digestives had long been tried and proven a failure, the relief afforded by the vegetable ferment, Caroid, was almost

immediate. This therapeutic effect was doubtless due to the much wider range of action of the latter. In many cases of maldigestion, it will be found that fermentation arises from the ingestion of food of whatever description: That is, whether proteids or carbohydrates be taken, the result is the same. It is evident, therefore, that, if success is to be obtained in remedying a fault of this character, it becomes necessary not only to aid in digesting one class of food, but all classes; i. e., a digestive is required which will be equally effective in the acid secretion of the stomach and the alkaline juices of the intestine. No animal ferment can, of course, possess this double property—each necessarily being restricted in action to its own specific environment.

While, theoretically, it seems plausible to attribute the well-known distress and gas-distention of the dyspeptic, to fermentation of undigested food, due to a lack of a certain secretion or ferment in some particular portion of the alimentary tract; yet, in actual practice, no such specialization of the trouble, or definite location of the seat of disturbance, can be made. The interrelationship of the several digestive glands, and the interdependence of their respective ferments in their chemical action upon food, is so close and constant, that any etiological factor or condition which interferes with the action of one is pretty certain to develop a corresponding loss of function in another; and the digestive process, as a whole, becomes incomplete. Pep-

tonization of food will be but partially begun in the acid stomach, and but partially carried on in the alkaline intestine, while, at the same time, the amylolytic process in the latter is disturbed, and both proteids and starches remain unabsorbed in the bowel to cause the symptoms recognized. Caroid, as a general or unconditioned ferment, performs the chemical duties of the several digestive secretions, both gastric and intestinal, in their solvent action upon food; and thus not only the proteids, but starchy substances are rendered soluble, and the undigested material which is usually left behind, either in the stomach or intestine, or both, to cause the fermentation and distress so common in cases like that of Dr. Weaver, is speedily dissolved, and removed through the walls of the intestine, as in health, by the natural process of osmosis and absorption.—[EDITOR.

RESULTS IMMEDIATE AND SATISFACTORY.

The American Ferment Company.

GENTLEMEN: Your product seems to be all right. I have a patient well along in pregnancy who is troubled with fermentative indigestion, and when her husband recently called upon me and stated her condition I handed him some of the Caroid tablets, and said,—“Have her try that.” To-night this gentleman again called and made the statement that his wife had been much benefited and was anxious to obtain some more of the tablets before the supply was exhausted. She and her mother are both using them. The latter is a woman of advanced age, who has been troubled for years with “sour stomach,” and had obtained no relief until trying these tablets. Please send me a further supply of the tablets (plain) and a half-pint bottle of the

Caroid Essence. This ferment is going to be one of my stand-bys if it continues to act in this way. Would be pleased, too, if you would send me copies of the various formulæ for Caroid tablets, and price list of the same.

Sincerely yours,
A. A. RANKIN, M. D.,

Clara City, Minn., Feb. 18, 1901.

NOTE: In the case mentioned here by Dr. Rankin, the preparation used was the Caroid tablet (plain), containing two grains each, 1 to 3 tablets, to be prescribed after each meal. This tablet has become very popular with physicians, as an after dinner remedy, to prevent or relieve attacks of acute indigestion brought on by previous indiscretions in diet or frequent over-feeding. It is usually taken immediately on rising from the table, followed in some instances, if acidity be high, by a draught of plain soda or Vichy water. Instead of this alkaline drink, however, many physicians prefer to neutralize acidity by prescribing the "Caroid and Soda" tablets, prepared according to the following formula:

℞ Caroid, gr. j.
Sodii bicarb., gr. iij.
Menth. pip.,
Sacch. lact., aa q. s.

Confirmed dyspeptics, who have become such owing largely to careless preparation of food or undue haste in eating, are often immediately relieved from the flatulence to which they have been long subjected, by simply taking one or more of these tablets with their meals, to complete a work illy performed by their deficient secretions, and thus prevent the occurrence of fermentation.—[EDITOR.]

FORWARDED POSTPAID.

The American Ferment Company.

GENTLEMEN: Please find enclosed three dollars for 500 Caroid and Charcoal tablets and 150 Caroid and Soda tablets. I have mislaid my price list of same, but think this corresponds with my check-book stubs where I have before ordered. I find it a most *excellent digestive*.

Yours truly,

CHAS. L. DODGE, M. D.,

Brooklyn, N. Y., Dec. 15, 1900.

651 Macon St.

NOTE: While Caroid and its preparations are widely distributed, and held in stock by all of the principal jobbers throughout the country, yet it cannot be found everywhere; therefore, if any physician should be unable to procure a supply from his local druggist, the manufacturers will be pleased at any time to fill an order and forward by mail, postpaid, at the usual prices. Though an expensive product to manufacture, the price has now been so reduced (\$1.35 per ounce), that the actual cost of Caroid (powder), dose for dose, is no greater than that of the animal ferments. At \$2.00 per 500, the tablets, as will be observed, may now be prescribed for less than one cent per dose.—[EDITOR.]

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ANIMAL FERMENTS A FAILURE.

The American Ferment Company.

GENTLEMEN: I have just received the supply of Caroid and Charcoal tablets. Before I order further I would like some information. Will only one grain of Caroid (with Charcoal, etc.) sufficiently aid the digestion of a dyspeptic? Which is the better combination,—"Caroid and Charcoal," or "Caroid and Soda?" I suffer much, in person, from indigestion. Would it not be well for me to take the pure Caroid? In my community there are numbers of

sufferers from dyspepsia, for whom I have prescribed animal ferments—all kinds of pepsins and pancreatin—with disgusting failures. God bless the man who discovers a real digestive that a poor man can buy. Let me hear from you soon, so that I shall know better how to order.

Very respectfully,

V. K. DEYO, M. D.,

Salt Lake City, Utah, Nov. 26, 1900.

ANSWER: Concerning the effectiveness of a one grain dose of the ferment, as represented in the Caroid and Charcoal tablets, it should, of course, be understood that this will depend very much upon the nature of the case. The dose ranges from one to five grains; but, in some instances, if very prompt effects are desired, and the natural secretions, themselves, are found to be practically deficient or inert, or if the quantity of food to be digested is of considerable amount, or of a character difficult to dissolve and absorb,—even larger doses may be prescribed, though this is rarely required, and, then, only temporarily. In ordinary cases of indigestion, such as the physician is most frequently called upon to treat, two, or, at most, three tablets, taken after each meal, will be sufficient to relieve the symptoms for which a digestive agent of this character is prescribed. As to the relative merits of the two combinations—charcoal and soda—it may be said, at the outset, that this is a question upon which physicians will always differ, each having his own opinion as determined by individual experience. In our estimation, they are equally effective, preference being given to the soda combination, only in

cases of gouty origin, and to the charcoal when there is need of a disinfectant or deodorizer as evidenced by excessive belchings of gas attended with a foul odor.

As compared with Caroid tablets (plain), either of the above mentioned combinations will be strongly indicated, if acid conditions prevail, or flatulence and fermentation are prominent symptoms. Charcoal and soda are both adjuvants to the action of the ferment in reviving apathetic functions and both tend to modify or neutralize adverse catarrhal conditions resulting from constant irritation of mucous surfaces due to putrefactive processes. In Dr. Deyo's case, though these particular symptoms are not mentioned in his report, we take it for granted that they exist, and would, therefore, recommend that the Caroid and Charcoal tablets be taken by him, according to the plan suggested in the letter of Dr. Weaver—already quoted in the "Correspondence," at the beginning of this column. The failure of the animal ferments to produce results in cases of this general character, is doubtless owing to their greatly restricted action, pepsin being inefficient in any but an acid medium, while pancreatin is rendered inert in passing through this same medium, before reaching its natural habitat—the alkaline juices of the intestine.—[EDITOR.

—:o:—

That man is generous to a fault, who never corrects it.—*Ex.*

CRITICAL REVIEWS.

THE USE AND ABUSE OF FERMENTS IN GASTRIC DISEASES.

In a paper read before the Metropolitan Medical Society under the above title, Dr. Morris Manges, Visiting Physician to Mount Sinai Hospital, discusses the nature and use of digestive ferments, both of animal and of vegetable origin. He believes that nature has distributed these valuable bodies throughout the animal and vegetable kingdoms both widely and wisely, and that she has endowed them with properties which ensure the fulfilment of their mission, even under adverse conditions. He states that, in animals, the digestive ferments probably do not exist preformed, but occur in the various viscera as proenzymes or zymogens from which they can be promptly separated on the addition of appropriate simple substances, which are either introduced in the food or are present in the bodily fluids.

Finally each of the important ferments are duplicated, so that starches are digested by ptyalin and amylopsin, proteids by pepsin and trypsin, etc.

Dr. Manges calls attention to the fact, that, of 4,700 carefully conducted examinations of stomach contents by Kellogg, less than 1 per cent. of the cases examined showed lessening of the ferments, notwithstanding that four thousand of these were patients suffering with chronic gastric disorders. He concludes that animal pepsin is seldom indicated in gastric disturbances, and that in all such

cases we should first resort to hydrochloric acid, lavage, electricity and diet. Although conditions in which the mucous membrane is inactive, as in catarrhs, (or when lessening of the functional activity of the stomach exists for a long period)—would seem theoretically to furnish an indication for the use of pepsin, yet he believes that its use is irrational, for, being itself a proteid, it is liable to be digested as such, and, therefore, as a remedial agent, would be inert. Of pancreatin he says, "The frequent administration of pancreatin in the hope that it will pass the hydrochloric acid in the stomach, and the combination of pepsin and pancreatin are so self-evidently unphysiological, that they may be dismissed without further comment.

Of the vegetable ferment obtained from the plant *Carica Papaya*, he says, "It will digest proteids in alkaline, acid or neutral media,—its digestive powers being enormous; the wide range of reaction is most striking, varying from 0.2 per cent. hydrochloric acid to 1 per cent. sodium bicarbonate or more. It has also a decided action in converting starch."

Concerning the relative value of the various papaya preparations he says: "As far as can be judged by the latest analysis by Chittenden, Caroid would seem to be the most active." While Caroid, he thinks, "has the advantages over pepsin of being independent of any effect from the reaction of the stomach contents, and of having

marked amylolytic properties," he still thinks that "any transitory benefit received from it is purchased at too great cost, the treatment of the cause being thereby neglected, except in cases of sub-or anacidity," where he thinks "it may be tried." He believes therefore, that we should "rely on radical measures, regulate the diet, stimulate the motor functions and provide for sufficient hydrochloric acid."

Few physicians in active practice will disagree with the author of the above remarks, when he states that animal pepsin seldom proves effective in the treatment of various forms of maldigestion, and even more certain are they to concur with him in his opinion that combinations of pepsin and pancreatin are obviously "unphysiological;" but, it is doubtful if many physicians, who are experienced in the treatment of gastric disorders, will accept his alternative suggestions. While it is true that there may be dyspepsias of the anacid type, it is equally certain that many patients suffer from hyperacidity, and, in either case, it is still a mooted question whether an acid or an alkali should be prescribed. Dr. Manges believes that the former is indicated in order to supply a deficiency of H. Cl, but the directly opposite opinion is held by many other eminent authorities, among whom is Sir T. Lauder Brunton, who says: "1. Alkalies before meals stimulate secretion of gastric juice. 2. Acids before meals *check* acid secretions of the stomach." [Cf. *Phil. Med. Jour.*, April 23, 1901].

It will be seen, therefore, that even were it admitted in a given case that a condition of anacidity exists which needs correcting,—one would prescribe H.Cl as a remedy and the other would administer an alkali.

The author's views concerning the importance of lavage in the treatment of these cases will meet with the approval of physicians who are in a position to adopt this procedure; but in actual practice, it will be found that lavage is not always available, and in any case it is as much a temporary measure as is the administration of an artificial digestive. It is claimed that the benefit received from the use of Caroid is only "transitory." But is it not true that all treatments are "transitory?" Is not hydrochloric acid (which the author recommends) prescribed only as a temporary measure? It is stated that, in the treatment of these cases attention should be given to the diet, but, why cannot a patient be brought under diet rules as well after the administration of Caroid as after the administration of H.Cl? The object sought by the author, in prescribing H.Cl, is to furnish the chemical medium essential to the action of pepsin, which is supposed to be present, but inactive. Yet, what is the difference in theory—whether we supply a ferment which will act regardless of conditions present, or whether we supply the medium necessary for a ferment (already present) to act in? In other words, why should not the stomach contract the habit of depending upon the artificial supply of acid, as well

as upon the artificial supply of ferments? Is it not true that both are remedial measures intended to produce temporary effects; while the natural digestive machinery is being put into proper order?

Compared with the use of H. Cl, it seems to us that Caroid is much the more rational treatment, and, for many reasons, the most effective. The secretion of acid in many cases of gastric disturbances is interfered with by a mucous coating, which Caroid removes. It should be remembered, too, that we have to deal with *intestinal* as well as stomach digestion. The administration of H. Cl will meet but one possible condition—viz., anacidity—for which many eminent authorities recommend an *alkali* instead), while Caroid acts under the various conditions as they exist throughout the entire alimentary tract, and upon whatever food encountered. Furthermore, the latter is not unfavorably influenced by the many agents which are incompatible with an acid remedy, or which interfere with the proper action of the normal digestive ferments. It has been shown by the experiments of Prof. Chittenden, that, as a proteolytic agent, Caroid is not checked in its digestive action by carbolic acid, salicylic acid or corrosive sublimate—three of the best known antiseptics. As an agent, therefore, whose digestive action is unrestricted by its chemical environment, it may be prescribed in combination with almost any drug whose effect may be desired to meet constitutional requirements.

Compared with use of animal ferments, one of the pronounced advantages of Caroid, as a digestant, lies in the fact that its action is not interfered with or limited by the *products of its own activity*) as has been found to be the case with pepsin), consequently much less of the Caroid ferment than of pepsin is needed to produce a given result. In studying the proteolytic action of pepsin, it will be observed that its partially peptonized product tends to encyst or encase food particles thus preventing the furtherance of the digestive process to a certain extent. With Caroid, on the other hand, the dissolved portions, or peptones, fall away from the food attacked, and, as the latter is left exposed to the direct action of the ferment, the process of disintegration is speedy and effective. When we take into consideration the further facts, that pepsin is inert in any but an acid medium, and that Caroid is effective in all media; that the former digests but one class of foods, the proteids, while the latter possesses this property over all classes; that the action of one is destroyed by various remedial agents, while the other will act in the presence of nearly all drugs and chemicals,—we feel justified in making the statement that Caroid is the logical remedy to administer in cases of gastric or intestinal disturbances as they are likely to occur in actual practice.

—:o:—

The plague is prevailing again in Alexandria, Egypt.—*Ex.*

SELECTED ARTICLES.

SIMPLE AND EFFECTIVE TREATMENT FOR DYSPEPSIA.

BY J. M. MCLEOD, M. D.,
LINCOLN, NEB.

Professor of Surgery in the Lincoln Medical College;
Surgeon to Lincoln City Hospital.

(Reprinted from *Medical Bulletin*, October, 1900.)

As a result of the labors of Ewald, Boas, Leube, Einhorn, and others; it is possible to determine both the pathological and the chemical conditions of the stomach existing in dyspepsia. But to determine these points it is necessary to have a special laboratory training and a great deal of time; requisites which the average physician does not possess. In the meantime these cases come into the hands of the latter with regularity and increasing frequency, and there is certainly a great need for a simple and effective method of treating dyspepsia. Fortunately I have been so situated as to be able to study the subject according to the laboratory methods described and practiced by the above-named specialists. There are, however, almost insuperable reasons why these methods can never be universally adopted in general practice. In the first place, it requires an enormous amount of time. Then, the conclusions based on these methods, as to the proper treatment, are so full of detail and cumbersomeness as to render the plan ill adapted for general use. The question of diet alone is a very troublesome one.

It is comparatively easy to lay down fast and hard rules as to

what a dyspeptic may and may not eat, but the patient's part is exceedingly unpleasant. In the first place, it requires such a radical change in his long-established habits in eating, and such a necessary disregard of individual tastes, that he frequently discontinues treatment in disgust. If the plan herewith submitted has no other point to commend it than that it offers an effective treatment for patients who will not submit to a greatly restricted dietary, or, in short, a means, whereby we may meet the conditions of maldigestion as we find them, not as we would have them, it is well worth consideration.

The first broad and universally conceded principle applicable to maldigestion is that a constant and essential feature of the condition is a lack of ability on the part of the digestive organs to properly perform their functions; this fact is equally true of acute dyspepsia, chronic gastric catarrh, and the various forms of so-called amylaceous or starchy dyspepsia. In most cases the causative element is a defective and deficient secretion of the digestive ferments; this, in turn, gives rise to a whole train of symptoms, which we recognize clinically as dyspepsia. This lack of digestive ability is an unmistakable and imperative indication for artificial aid—to supply those working principles by which foodstuffs are converted into the end proteids of digestion. This fact, which may be termed an axiom, stands out prominently in every scientific treatise upon dyspepsia. The great question, how-

ever, is how can artificial digestion be best accomplished? That pepsin, pancreatin, and the various diastasic ferments fail in this respect will be acknowledged by everyone of experience; their field of usefulness is at best an exceedingly limited one; and may be characterized as unreliable. It is interesting to note, in this connection, the recent results obtained by Prof. Reynolds Green, the well-known English physiological chemist, who found that pepsin does not, in itself, effect the digestion of albuminoids into peptones, but that it is merely an initiatory step, which is completed by the pancreatic ferments in the intestines. Other well-known facts concerning pepsin and pancreatin throw additional light on the subject of why these are clinically ineffective. For instance, pepsin requires a strongly-acid medium, else it is inert. Pancreatin is likewise inert in an alkaline medium. Furthermore, neither ferment is strong in its digestive power. As is well-known, the gastric contents in the various forms of dyspepsia are sometimes acid, sometimes alkaline. In other words, the pathological conditions in dyspepsia call for the exercise of properties which pepsin, pancreatin, and the diastasic ferments do not possess. Another reason for the limited value of the above ferments is that the subjective symptoms of dyspepsia imperatively demand the administration of palliative remedies for relief, and many of these remedies destroy the physiological activity of pepsin, pancreatin, etc. An ideal ferment

must possess the properties of digesting all classes of foodstuffs as represented in an ordinary diet, and, most important, must exercise its activity absolutely independent of chemical conditions existing in the stomach. Furthermore, it is necessary that such a digestive ferment preserve its power when administered conjunctively with the various antiseptics, astringents, bitter tonics, etc., without the aid of which there can be no successful treatment of dyspepsia. Most interesting in this connection is the published report of Prof. Chittenden, of Yale, regarding vegetable ferments, showing that "Caroid," the soluble digestive ferment derived from *Carica Papaya*, possesses the following characteristics:

1. It is a true soluble digestive ferment of vegetable origin.
2. It has marked proteolytic action in acid, alkaline, and neutral solutions and in the presence of many chemicals, antiseptics and therapeutic agents.
3. It has a peculiar softening and disintegrating action on proteids, and its general proteolytic action is that of a genuine digestive ferment, similar to the ferments of animal origin.
4. It has amylolytic, or starch-dissolving, power.
5. It has a marked rennet-like action upon milk and a pronounced digestive action upon milk casein.
6. It exerts its peculiar digestive power at a wide range of temperature.
7. The ordinary conditions of health and disease in the stomach and intestines are not likely to

check its action, while certain possible conditions may accelerate it.

Here we have an agent that in action differs widely from the digestive ferments of animal origin, and one that, on theoretical grounds, perfectly fulfills the requirements of artificial digestion. I have been convinced by an extensive clinical experience, embracing several hundred cases, not only that it also practically fulfills these requirements, but that Caroid is by far the most valuable single agent we have for the treatment of dyspepsia. Particularly gratifying is the fact that the symptoms of the disorder will yield to the administration of appropriate remedies when used in conjunction with Caroid, which, without this latter agent, partially or completely fail. Although previous to the use of this digestive I had resorted to the examination of the stomach-contents in almost every case as a routine practice, in order to determine in what elements and how far the digestive powers of the stomach were impaired, I now reserve this procedure for certain rare cases in which there are special reasons for knowing the exact chemical and other conditions existing in the stomach. The results obtained are extremely satisfactory, and the saving of a great amount of time is, in itself, a strong commendation.

In regard to diet the character of the patient should be first considered, and, if a restricted diet will be observed, it should be required. On the other hand, if satisfied that a strict diet will not be observed, it is better to prescribe

only such general rules as the patient will probably follow, such as regular meals, proper mastication, the avoidance of all coarse, overstimulating, and improperly cooked foods, and especially the avoidance of those foods to which troublesome symptoms can be ascribed. It is seldom necessary to bar tea or coffee, unless their use has been excessive.

The most common class of cases—those ordinarily designated chronic dyspepsia or chronic gastric catarrh—are, according to the usual methods of treatment, difficult to manage even upon a semblance of routine plan. These patients—whose complaints are so well known that it is almost superfluous to mention them—present symptoms soon after eating. There is pain and a sensation of fullness in the region of the stomach, with evidences of slow digestion and acid eructations. Flatulence, constipation, capricious appetite, nausea, and vomiting are present with varying degrees of frequency. Except when special symptoms are particularly accentuated and call for the administration of special correctives, these cases may be satisfactorily treated by either of the following combinations now offered in the form of tablets:

1. $\mathcal{R}$ Caroid, gr. j.
Charcoal,
Boric acid, aa gr. iss.
Sacch. lac.,
Pulv. arom., aa q. s.
2. $\mathcal{R}$ Caroid, gr. j.
Soda bicarb., gr. iij
Menth. pip.,
Sacch. lac., aa q. s.

77.

If fermentation and excessive acidity are especially pronounced, Caroid may be judiciously combined with creosote, in three grain doses; thymol; bismuth; or larger doses of sodium bicarbonate, according to individual requirements. In atonic dyspepsia, characterized by loss of appetite and the inability to digest food, a combination of Caroid with the usually-employed bitter tonics—*nux vomica*, quassia, gentian, etc.—affords surprisingly quick relief, and in most cases permanent cure.

It is not my object, in presenting this paper, to offer a systematic treatise upon the treatment of dyspepsia, but merely to emphasize the fact that this condition can, according to the above general principles, be satisfactorily treated by the average general practitioner, who has neither the time nor the laboratory training and equipment to study scientifically the exact chemical and pathological conditions existing in the stomach. As above mentioned, it is a simple and effective method which has proved invariably satisfactory after three years' extensive employment.

A mustard plaster made with the white of an egg will not leave a blister.—*Ex.*

White of an egg beaten with loaf sugar and lemon relieves hoarseness—a teaspoonful taken once every hour.—*Ex.*

CAROID IN INTESTINAL INDIGESTION.

BY E. E. LEWIS, M. D.,
PORT HURON, MICH.

(Reprinted from *Medical Summary*, Oct., 1900.)

The following interesting case recently presented itself to me:

A young lady of nervous temperament, twenty-three years of age, had suffered since childhood from a condition which had been extremely annoying and painful to her, as well as a source of much solicitation and anxiety to her parents and immediate relatives. She stated that from the age of six years, she had been subject, after eating, to the formation of gas which would distend the stomach like a drum, giving rise to the most agonizing pain. For an hour or an hour and a half after each meal she would be annoyed by the belching of great quantities of this gas, after which, until the next time she took food, she would remain in a comparatively normal condition, except that she was very sore across the stomach. This soreness of which she complained was a constant symptom.

The patient stated that on some occasions the gas would pour forth from her mouth in such quantities that it looked like steam exuding; and that at such times while the belching process continued, she had never been able to obtain any relief—the reformation being so rapid that there seemed to be no amelioration from her condition. Her mother stated to me that she believed the condition to be hereditary, as the father in previous

years had suffered with a similar trouble. be tablets of the following excellent combination:

The patient's general physical condition was good. The bodily nourishment seemed to be normal. There was no emaciation and the bowels were not constipated. So far as the quantity and character of the food were concerned, it seemed to make very little difference what she ate, whether of the lightest kind of diet or the fullest kind of a meal. Starchy, fatty and albuminous foods, each and all alike, were instrumental in causing the above symptoms.

I decided that the case was one of intestinal indigestion, and that the formation of gas and consequent distention of the stomach was the result of fermentation. As it was a new patient, who had spared neither time nor money in her endeavors to find relief, I considered that I had a therapeutical problem on my hands difficult of solution. Giving her a placebo, I asked her to call in two days for further instructions.

Feeling certain that the patient had previously been in good hands, and that all of the ordinary forms of treatment had already been resorted to, I decided in the interval to test the claims recently made for the vegetable digestive ferments as represented by Caroid, —I wished especially to test their quality of acting regardless of media, or rather of acting in all media, thus insuring certainty of results throughout the whole digestive tract. I considered it a case particularly well suited for such a test. The only preparation at the time available chanced to

R Caroid, gr. j.
Charcoal,
Acidi borici, aa gr. iss.
Sacch. lact., q. s.

I ordered two of these tablets to be taken immediately after meals, and, after the second day, the results were so strikingly satisfactory—being noticed by the patient as well as her family—that I decided to continue with the treatment,—since which time I have heard nothing but encouraging results. Although less than a month has elapsed since the beginning of treatment, my patient can eat with impunity almost any kind of food that she desires. The pain in the epigastric region, of which she had so long complained, has entirely disappeared. She has no belching; no accumulation of gas nor distention of the stomach; in fact, she is, as she states, "perfectly well."

Disappointment, however, so often destroys our apparently well-grounded hopes in medicine, that we are never sure of any new remedy, or very certain of most old ones. Nevertheless we sometimes find in the wonderful economy of Nature, wherein things are created reciprocally for each other, a something that seems to have been provided as a natural corrective of the shortcomings of the human organs,—a remedy that fills a niche from which it is not displaced by time. I hope that further experience will confirm my present belief that the ferment of the *Carica Papaya* is one of these same niche-fillers.

AN EFFECTIVE AID TO DRUG ACTION.

BY C. K. DRUMHELLER, M. D.,
CHICAGO, ILL.

(Reprinted from *Toledo Medical and Surgical Journal*, Feb., 1901.)

Though the precise nature of the action of drugs upon the tissue cells of the animal economy has never yet been thoroughly understood, nevertheless it is known that only so much of the drug will affect the economy as shall have been rendered absorbable by first being dissolved in the gastro-intestinal secretions. Should the latter, by any reason, therefore, become vitiated or deficient (as in most diseases), it is evident that a greater or less proportion of the drug administered, will either remain behind partially unabsorbed, to be increased by repeated doses and at last become a mechanical impediment to digestion, or else it will be actually discharged with the feces. In view of this inconvenience and danger, as well as of the loss of the therapeutic action of the remedy itself, it has sometimes been proposed to administer all medicine in such a state of solution as will insure their direct absorption without precipitation. "But apart from the practical difficulty, if not impossibility," says Prof. Alfred Stillé, "of securing this condition, it is probable that no state of solution is so favorable to the absorption of a medicine as its union with the organic solvents it meets with in the body, and that no other solvents will be so apt to produce a solution so well adapted to the purposes of the economy as those referred to."

Continuing on this subject, the same author states: "The stomach is the organ best adapted by nature, and the one most usually employed for the introduction of medicines into the body. The absorption of solid medicines depends almost altogether upon their degree of solubility in the gastro-intestinal secretions. Mineral substances, insoluble in water, are often made extremely soluble by means of the gastric acids. This is eminently the case with iron, mercury, arsenic, magnesia, etc. Other medicines, which are unaffected by organic acids, dissolve under the influence of the alkaline secretions of the pancreas and liver. Sulphur and iodine belong to this category, and all fixed oils and fatty substances are emulsified by these secretions before being absorbed by the lacteals. Such would be the result, when these various drugs are administered in a state of health; but in disease, owing to torpor of the stomach or intestines, produced by local disturbances, general febrile disorder or imperfect excitability of the nervous centers, or, on the other hand, in consequence of a morbid susceptibility of the alimentary tract itself, medicines may be either slowly and imperfectly absorbed or rejected altogether by vomiting.

It will be seen, then, that in actual practice, to obtain proper therapeutic effects of the drug administered, the latter must meet conditions identical to those which are essential to the digestion and absorption of food itself.

Any digestive agent, therefore, mention a few examples of its uses which aids or increases the action for the average adult person in of the gastric and intestinal secre- individual cases:

tions; one which possesses both In gastro-intestinal catarrh, with proteolytic and amylolytic proper- diarrhœa:

ties, and acts equally well in both $\mathcal{R}$ Caroid, gr. iij.
acid and alkaline media; one, also, Charcoal,
which cleanses the alimentary Bis. subnit., aa gr. ij.
membrane by dissolving coatings M. Sig. Take one powder
of mucus that may collect—can- three to five times a day.
not be otherwise than an effective $\mathcal{R}$ Caroid, gr. iij.
aid to the absorption and conse- Zinc. sulpho-carb., gr. ij.
quent "action" of drugs. M. Sig. Take one powder

Such an agent, as above de- three to five times daily, and more scribed, the writer has found in if necessary, in case of malignancy.

his experience with the vegetable In indigestion with "bilious- digestive ferment, Caroid, ob- ness:"

tained from the plant, Carica Pa- $\mathcal{R}$ Caroid, gr. 3.
paya; and which he believes can- Podophyllin (resin), gr.
not be given amiss to any patient $\frac{1}{8}$ — $\frac{1}{4}$.

irrespective of the disease for Gentian (pulv.), gr. 2.
which he may be treated. The in- M. Sig. Take one powder
dependent action of this ferment, three times a day, and after bowels
under all the varying conditions move freely reduce to two, then
existing in the alimentary tract, one a day until cured.

renders it an agent incomparably In ordinary constipation:

superior to any of the animal di- $\mathcal{R}$ Caroid, gr. iij.
gestives, which are much too lim- Ext. cascara sagrada, gr. ij.
ited in their application ever to Gentian (pulv.), gr. j.

become practicable for the pur- M. Sig. Take one powder
pose we are considering. Pepsin, morning and evening—more or
of course, is rendered inert in the less as is found necessary.

presence of an alkali, while the In rheumatism, cystitis, etc.:

action of pancreatin is destroyed $\mathcal{R}$ Caroid, gr. iij.
by an acid. Caroid, however, may Salol, gr. v.

be given with acid, alkaline or M. Sig. Take a powder four
neutral salts, and yet in each case times daily.

retain its enzymotic power and aid For general glandular inactiv-
or increase the function of the ity:

natural ferments. $\mathcal{R}$ Caroid, gr. iij.
In prescribing this remedy, I Iridin (ext.), gr. ss-j.
have usually given it in doses Leptandrin, gr. j-ij.

—depending, of course, on the M. Sig. Take one powder,
age and condition of the patient. one to three times a day, as the
Suffice it, in this connection, to case may require.

In hepatic torpor, with bloating and flatulence:

℞ Caroid, gr. ij.

Iridin, gr. ss.

Salol, gr. iij.

M. Sig. Take one powder three times a day.

Thus we might continue almost indefinitely, combining Caroid with nearly every therapeutic agent of any established value. Such a combination with other drugs not only renders them more effective, but results are more quickly obtained owing to the digestive and solvent action of the Caroid, which itself enhances the absorption of the drug, besides stimulating to action the normal digestive secretions. Medicines are thus not allowed to lie inactive in a torpid stomach, without being put into actual service. The writer has found this ferment of especial value, too, when combined with the usual remedies given internally for gonorrhœa, aiding the stomach in their speedy absorption and rendering the drugs more serviceable.

Coincident with some of the opinions expressed in this article, we note in the *Philadelphia Medical Journal*, for December, 1899, a statement by Dr. J. M. DaCosta, of Philadelphia, that in cases of "progressive, pernicious anæmia," he has obtained excellent results from a combination of Fowler's solution of arsenic with Caroid, prescribing three drops of the former and two grains of the latter after each meal. He states that the meal should consist of plenty of milk, eggs, meat juice, and also, if the patient can take it,

small pieces of under-done meat, finely cut up. "In other words," says he, "we will try to give the patient a blood making food and tonic and help his stomach in the task of digesting it." In this case, as will be seen, the ferment is given not only to enhance the absorption of the drug, but to aid in the digestion of the food.

Again in the *Medical Times*, of New York, September, 1900, we note that Dr. Thomas Hunt Stucky, of Louisville, Ky., makes use of the following formula in the treatment of asthma:

℞ Caroid, gr. xj.

Hydrastin, gr. iv.

Podophyllin resin, gr. x.

M. ft. capsules No. x. Sig. Take one after each meal.

Dr. Stucky says: "I am more and more convinced every day that a large percentage of these cases are curable. I am impressed with the fact that the vast majority of them are dependent upon disturbances of metabolism or intestinal disturbances; that the vast majority of people who are asthmatic are made so mechanically, due to fermentation, changes taking place within the intestines and the distension of the transverse colon, and pressure resulting therefrom."

The statement made by Dr. Stucky that "disturbances of metabolism" are responsible for various wasting diseases, is one which will not be gainsaid by any physician in active practice, whose principal aim in prescribing drugs is to correct this common error in the vital processes. It is now well understood that the primary object of the ferments, in both

the animal and the vegetable kingdoms, is to assist metabolism, and that when deficient or absent the metabolic changes are incomplete. Through their enzymotic power, the digestion and assimilation of food is assured, the general nutrition of the patient is improved, and the response of individual tissue cells to the action of therapeutic agents correspondingly increased,—the reaction of a part being directly proportioned to its degree of vitality. The administration of a digestive ferment, therefore, possessing the general qualities exhibited in Caroid, must prove of the highest utility in aiding the system to recover its natural tone and vigor.

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RECITAL OF CASES.

Dr. W. T., æt. 40, came to me for treatment for, as he claimed, "heart disease." Examination revealed a weak and what is sometimes called "an irritable heart," which had not been improved by a long continued use of digitalis and other cardiac remedies. That the heart, however, was not the only, nor even the principal organ affected, was indicated from the symptoms and history of the case, which pointed unmistakably toward the digestive tract. The greatly distended abdomen, pain in the epigastrium after eating, vomiting, alternating constipation and diarrhoea and regurgitation of food, all were plainly diagnostic of gastro-intestinal catarrh.

Believing that the food ingested became only partially dissolved,

the undigested residue remaining as a foreign body to serve as a source of fermentation and excite irritation in both gastric and intestinal cavities, it was considered advisable to prescribe a remedy which would not only remove from the membranes the abnormal secretions formed, but which, as a digestant, would perform the functions of the natural ferments. It was deemed essential also to clean out the intestinal tract with the aid of an effective cholagogue agent. Caroid (gr. iij) was therefore administered immediately upon rising in the morning, followed in about an hour and a half (shortly before breakfast) by a liberal dose of sodium phosphate. Directly after each meal during the day, Caroid (gr. ij to gr. iij) was given.

The above method of treatment was continued for two weeks, at the end of which time the pulse was found to be full and soft; the "heart troubles" had disappeared; the distended abdomen was much reduced; the bowels were more regular, and digestion was much improved. Continued the Caroid for another fortnight in combination with remedies for the establishment of the nervous system, which the patient complained of as being "much out of tune." He is now, at the end of a month, in good health.—J. P. Koonse, M. D., Lafayette, Ind., in *Interstate Medical Journal*, Oct., 1900.

John McK., Irish-American, æt. 56, had been a victim of the alcohol habit for more than twenty-

five years, the principal ill-effects from which were exhibited in the form of indigestion, sleeplessness and occasional muscular tremors. Notwithstanding his well-known proclivities, he had prospered well in a worldly sense, had become a politician of local importance, and desired appointment to a certain public office which required a steady hand and clear head. Every attempt, however, to abstain from his usual dosage of stimulants resulted in increased nervousness, sleeplessness and great repugnance to food. It was utterly impossible for him to eat, the food remaining an almost totally undigested mass in the stomach for two or three hours and then ejected. Various remedies had been tried without avail, animal ferments among the number.

It was finally decided to try a vegetable digestive, Caroid being selected as the most efficient. Four grains of the powder were given in a cupful of hot water with each meal. Strychnine and iron were also given soon after eating for their general tonic effect. The results of this treatment were immediate and satisfactory. The patient was determined to gain control over his unfortunate habit, and refrained from his accustomed stimulants during the whole course of the treatment.

At the end of three weeks the improvement was very marked. Food was taken regularly and digested with ease. The nervousness had almost entirely disappeared, and the patient slept without the aid of narcotics. The de-

sire for alcohol gradually wore off, the appetite increased, and at the end of the second month of treatment food was taken and digested without the use of the ferment. Three months have now elapsed since the patient abandoned the use of stimulants, and he reports himself as never having been in better physical condition, that his weight has increased fully ten pounds, and that he considers himself entirely cured of his old habit.—John McDonald, M. D., New York, N. Y., in *St. Louis Medical and Surgical Journal*, Sept., 1900.

CASE I. Mrs. M. M., dress-maker, æt. 48, had been a sufferer from dyspepsia, of the acid flatulent type, for several months,—having lost many days' work in consequence. Her principal symptoms were eructations of gas and pain in the epigastrium soon after eating. She had already used many popular proprietary medicines,—essence of pepsin, lactopeptine, etc., but had thus far derived only temporary benefit. She had also employed specialists, by whom lavage of the stomach was performed every other day for a number of weeks, and still no permanent relief was obtained. The patient now came into my hands by accident. I prescribed Caroid, 5 grs., after dinner, and 3 grs. after breakfast and supper. Recommended a farinaceous diet, with new milk and lime water, and plenty of stewed fruits. Notwithstanding the unfavorable previous history of the case, recovery was

complete after three weeks' treatment.

CASE II. Miss J. K., æt. 24, is a shop girl, who sits ten hours a day bent forward in her chair. She is thin and anæmic; weighing ninety-eight pounds, reduced from one hundred and twenty-eight. She states that she has not enjoyed a meal for many months, but suffers great pain after the slightest repast, besides belching gas at all hours of the day and night. As she was very constipated, going sometimes, she said, for "eight days without a movement," I immediately gave her a thorough purging with sulphate of magnesia. A teacupful of hot water, with salt, was then prescribed three times a day before meals; Caroid, 5 grs., being given after every meal in milk. One month after the beginning of this treatment, the patient reports that her bowels are regular, that she has gained ten pounds, feels much better and can eat any kind of food.

CASE III. Mr. D. C., æt. 49 years, 5 feet 5 inches in height, and weighing 112 pounds, was a physical wreck from dyspepsia,—not daring to eat his dinner during the day when at work. He was accustomed to eating his meal in the evening, after the day's work was done, and even then suffered great pain during the night or until the food was vomited. He therefore obtained but very little sleep. Various modes of treatment had already been employed in this case, but with unsatisfactory results. Learning that the patient was addicted to the tobacco habit, having been an inveter-

ate chewer for twenty-eight years, its further use was at once interdicted, and sweet flag and gentian recommended as a substitute. The usual hot water and salt potations were ordered to be taken before meals, the latter to consist of dry food without liquids. Five grains of Caroid were also given as usual after each meal. After one month's treatment the patient reports that he has gained six pounds in weight, enjoys his meals, sleeps well and feels ten years younger.—Chas. A. Graeber, M. D., Meriden, Conn., in *Monthly Cyclopædia of Practical Medicine*, May, 1901.

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ITEMS AND NOTES.

The Dynamic Value of Carbohydrates.—According to the *Georgia Journal of Medicine and Surgery*, Abel summarizes the value of carbo-hydrates for muscular work as follows:

1. When the organism is adapted to the digestion of starch, and there is sufficient time for its utilization, sugar has no advantage over starch, as a food for muscular work, except as a preventive of fatigue.

2. In small quantities, and in not too concentrated a form, sugar will take the place practically speaking, weight for weight, of starch, as a food for muscular work, barring the difference in energy and in time required to digest them, sugar having here the advantage.

3. It furnishes the needed carbohydrate material to organisms

that have as yet little or no power to digest starch. Thus milk sugar is part of the natural food of the infant.

4. In times of great exertion or exhausting labor, the rapidity with which it is assimilated gives it certain advantages over starch.
—*Med. Times.*

Glycogen Formation.—After a series of experiments with frog material for the purpose of ascertaining the possibilities of "glycogen formation when albumins are used as food," Blumenthal and Wohlgemuth reach the following conclusions: (1) That feeding with casein results in very little if any increase in the total amount of glycogen found in the animal; (2) that feeding with gelatin causes no increase in the amount of glycogen; (3) that feeding with ovalbumin (an albumin containing a carbohydrate radical) results in production of glycogen.—*Berliner Klin. Woch.*

Vegetarianism vs. Flesh Eating.—Chittenden has said that we should bear in mind that the nutritive value of food depends not only upon its composition but upon its digestibility, and that food value depends much upon the percentage of nitrogen. Hence a rational diet is to be found only in the judicious mixture of the proteids, fats and carbohydrates. The same writer further shows from the analysis of animal and vegetable foods and by repeated experiments, that the average

workingman, in order to prevent the loss of nitrogen and carbon, requires daily about 18.03 grms. of nitrogen and at least 328 grms. of carbon; and as 118 grms. of albumin contain but 63 grms. of carbon, it is plain that there would be required 265 grms. in the form of fats or carbohydrates or both; lean meat must have fat or carbohydrate; potatoes demand some nitrogenous matter. These are good representatives of their respective classes. Hence, it can be readily seen that Chittenden makes a deduction from these facts that warrants him in making the statement that the judicious mixture of all the alimentary principles from both the animal and vegetable kingdom constitutes the food best adapted to the wants of mankind.

Upon this subject *The World Review* says: Long lists of careful analyses have been made setting forth just how much strength and flesh a man may expect from a given quantity of each kind of food. Man has been adjured to conquer his savage nature by adhering to a purely vegetable diet. To excite his ambition, he has been reminded of the champion Japanese wrestler who ate only rice. But now Prof. Ferdinand Hueppe publishes a paper in answer to the question, which deals with it exhaustively from all points of view.

The professor thinks that hard times first drove man to become a most cunning and ferocious beast of prey. The anthropoid ancestry of man fed on nuts, fruit, eggs, small birds and insects. Dur-

ing the interglacial epoch man was a mammoth-hunter, and the primitive Europeans were fish and flesh eaters. The Asiatics became shepherds and cultivated cereals so that when they migrated into Europe they introduced a mixed diet there. Only in the East, where the crowding of population made animal food scarce, did man take to rice eating. So man, through the struggle for existence, has evolved into a flesh eater, a mixed feeder and lastly into a vegetarian which has been made possible to him by the introduction of fire and cooking. Man has neither the teeth nor the digestive tract of an herbivorous animal. He can not bear such a diet as that of the Irish peasant unless bred to it from infancy and inured by hard toil.

The lion, a flesh eater, is much stronger in proportion to size, than any vegetarian animal, such as the horse, ox or elephant, none of which can lift its own weight. The lifting power of man, the mixed feeder, exceeds that of any other animal. Louis Cyr is recorded to have lifted 3,672 pounds, and a man weighing 165 pounds often carries sacks weighing 225 pounds.

The vegetarian is like an over-heated engine, which is in danger of explosion from the use of the wrong kind of fuel. His digestive system is forced to deal with far too large a bulk of food, and energy is wasted in digestion that might be devoted to mental activity. Of course he who consumes milk, butter, eggs and cheese is not considered a vegetarian.

Vegetarianism does not tend to produce a mild and gentle spirit if the rhinoceros, the buffalo, and the rice-eating Chinese pirate are to be taken as examples. Professor Hueppe tells us in conclusion that the present day vegetarians are men who are unequal to the strain of town life and seek for a "heal-all" in some fad or other. —*Medical and Surgical Monitor.*

The Fuel Value of Food.—Heat and muscular power are forms of force or energy. The energy is developed as the food is consumed in the body. The unit commonly used in this measurement is the calorie, the amount of heat which would raise the temperature of a pound of water 4° F.

Instead of this unit some unit of mechanical energy might be used—for instance, the foot-ton, which represents the force required to raise one ton one foot. One calorie is equal to very nearly 1.53 foot-tons.

The following general estimate has been made for the average amount of potential energy in one pound of each of the classes of nutrients:

	Calories.
In 1 pound of protein,	1,860
In 1 pound of fats,	4,220
In 1 pound of carbohydrates,	1,860

In other words, when we compare the nutrients in respect to their fuel values, their capacities for yielding heat and mechanical power, a pound of protein of lean meat or albumen of egg is just about equivalent to a pound of

sugar or starch, and a little over two pounds of either would be required to equal a pound of the fat of meat or butter or the body fat.—*U. S. Dep't. of Agriculture (Circular No. 46.)*

Potatoes in Diabetes Mellitus.

—A. Mossé answers the mooted question as to whether potatoes may have a place in the dietary of the diabetic, in the affirmative, and cites two cases in which the wisdom of such addition to the fare was evidenced by a prompt decrease in the amount of sugar excreted in the urine. The potatoes should be given to the amount from two or three pounds daily, as a substitute for the whole or a part of the bread allowed. The cases which seem to respond best to such management are those of medium intensity and of the arthritic type.—*Klinisch-therapeutische Wochenschrift.*

Gastric Disorders.—This subject was dealt with in a series of papers at the morning session [Meeting of the Amer. Med. Assn., 1901], Dr. Boardman Reed, of Philadelphia, read the first paper, which was entitled "The Influence of Certain Common Remedies upon Gastric Functions." The conclusion at which he had arrived after a number of experiments and the careful watching of cases was that organs that were acting normally were likely to be injured by drug stimulation. He had found that hydrochloric acid and pepsin, when

given separately, both tended to impair the digestion, whereas when given together they had the opposite effect. Perfectly normal stomachs were probably in a minority, especially among persons employed in trades. In the case of such persons the digestion might be injured by a simple, bitter tonic, even when used only a short time. More care should be exercised in the indiscriminate taking of drugs, even those that were supposed to be harmless.—*Med. Rec.*

Digestibility.—The value of a food is determined not alone by its composition, but also by its digestibility; that is, by the amount of it of which the body can retain and utilize as it passes through the digestive tract. The term digestibility, as frequently employed, particularly in popular articles, has several other significations. Thus, to many persons it conveys the idea that a particular food "agrees" with the user, i. e., that it does not cause distress when eaten. The term is also very commonly understood to mean the ease or rapidity of digestion, and one food is often said to be more digestible than another because it is digested in less time. However, the term digestibility is most commonly understood in scientific treatises on the subject to mean thoroughness of digestion. The digestibility of any food may be learned most satisfactorily by experiments with man, although experiments are made by methods of artificial digestion. In the experiments

with man both food and feces are analyzed. Deducting the amounts of the several nutrients in the feces from the total amounts of each nutrient consumed shows how much of each was digested. The results are usually expressed in percentages and spoken of as coefficients of digestibility. From a large number of experiments with man it has been calculated that on an average the different groups into which foods may for convenience be divided have the following coefficients of digestibility:

Coefficients of digestibility of different groups of food.

Foods.	Protein.	Fat.	Carboly- drates.	Mineral matters.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Animal foods.....	68	97	100	75
Cereals and sugars.....	85	90	98	75
Vegetables and fruit....	80	90	95	75

—U. S. Dept. of Agriculture, (*Circular, No. 46.*)

Importance of Diet.—At the meeting (held March 11, 1901) of the Medical Association of the Greater City of New York, Dr. W. H. Porter said he did not think diet should be divorced from medication. With the present knowledge the subject of dietetics is not as difficult or intricate as it formerly was. The system requires about equal proportions of starch, proteid matter and fat, and the problem is how to get the proper amount of each appropriated with the least taxation. There should therefore be a well-regulated mixed diet, but one in which animal food predominates. The following list is suggested: Two eggs, seven

ounces of wheat bread with butter, and from half a pound to a pound of meat. The stomach is not the only organ of digestion. As a matter of fact only one-ninth part of the digestion is performed in this organ, while the other eight-ninths belong to the intestines. A careful watch of the urine will always tell how the patient is doing. If the amount of urea is low and of the uric acid large, the condition is unsatisfactory, while the presence of indican indicates indigestion. Dr. Porter had never found it necessary to put this class of patients on an absolutely liquid diet.—*Med. News.*

The Dietetic Value of Sugar.—

There is an impression among the laity, and from which the medical profession is not entirely free, that there is something peculiarly harmful in sugar; but we have here, as is commonly the case, to make a discrimination between intelligent use and injurious abuse. The advantages of sugar as an article of diet, apart from its palatability, resides in the ease with which it is digested and absorbed, the completeness with which it is consumed in the economy, and its potentiality in generating heat and energy and in repairing waste, as demonstrated both experimentally and practically. The entire subject is discussed at some length and in its various phases, by Dr. H. W. Gardner (*British Medical Journal*, April 27, 1901, p. 1010), who suggested that sugar may prove of value as a food in cases in which the nutrition is impaired,

especially in the presence of simple marasmus, anæmia, tuberculosis, and the state of malnutrition in those who inherit a predisposition to tuberculosis, during convalescence from various diseases, and also in growing boys and girls, and in the aged. It should not, if pure, injure the teeth, provided the hygiene of the mouth be observed. Its use is contraindicated in the presence of diabetes or glycosuria of gout in the obese, and of mucous disease.—*The Pennsylvania Medical Journal*.

Vomiting of Pregnancy.—Sodium bicarbonate in the treatment of vomiting of pregnancy has proven very efficacious, two grammes being given in a capsule to overcome what has been considered the fundamental cause—i. e., an overacid state.—*Interstate Medical Journal*.

The following combination of Caroid with bicarbonate of soda (in tablet form) has been highly recommended by many physicians for the treatment of this stubborn complaint:

R Caroid, gr. j.
Sodii bicarb., gr. iij.
Menth pip.,
Sacch. lact. aa q. s.

M. Sig. One to three tablets after each meal.—[EDITOR.]

The Dietetic Treatment of Gastric Hyperacidity—Hyperchlorhydria.—In a critical summary of this subject in the *Scottish Medical and Surgical Journal*, for Feb-

ruary, Russell begins by reminding us that this subject is somewhat complex, and that the recognized authorities are not agreed. There are, however, certain ascertained facts. It is well known that in hyperchlorhydria the digestion of starch in the stomach is early arrested; in other words, the amylolytic stage of gastric digestion is shortened, owing to the ptyalin being rendered inert or destroyed by the excess of acid. This is the explanation of the amylaceous dyspepsia of which we hear a good deal, and which is often recognized, although of its true significance there may be no correct idea. Some people even suggest that this arrest is of little consequence, as the starch passes into the duodenum to be acted upon there, and in the small intestine generally, and finally converted. This may be so in fairly normal digestion; it is certainly far from the truth in hyperchlorhydria. The retention of the undigested starches by the hyperchlorhydria stomach is a most important factor in the case. Based upon what has been said, two lines of treatment are adopted. The one is resorted to with a view to using up the excessive gastric secretion, by giving abundant proteid food, a readily digested form. The other method is based on the hypothesis that the more proteid is taken the greater the secretion of acid; and that to correct the hypersecretion, patients are best treated by a diet consisting largely of carbohydrates.

Von Sohlern, Hemmeter, Rosenheim, and others advocate the

carbohydrate line of treatment; Boaz, Penzoldt, and others adopt the proteid method; while others, as Riegel, compromise the matter by giving both kinds, but lay stress on the importance of both being given in an easily digestible form.

Hemmeter's experiment is always to be recalled in this connection; he brought up two puppy dogs, the one largely on carbohydrates, the other largely on proteids, and at the end of a year found that the former secreted less acid than the latter. Meanwhile the proteid treatment is popular because of the speedy relief it often affords; on the other hand, von Sohlern and others still adhere to their contention that the carbohydrates have a distinctly beneficial effect.

The question of diet depends very much on the severity of the condition, and in a very important measure on the type of carbohydrate which is used, and also on the skill with which the whole diet is regulated in individual cases. A mixed diet does admirably in many cases if the proteid be given in an unirritating and easily digested form, and if the carbohydrate be given at the right time and in a form capable of rapid transformation.

One further point of interest in connection with diet in hyperchlorhydria is the action of fat. Bachmann has lately shown by investigations on persons suffering from this condition that fat exercises a restraining influence on both the total acidity and the free hydrochloric acid, while not interfering

either with the digestion of starch or the secretion of pepsin. Strauss has also shown the beneficial influence of fat in these cases.—*Ex.*

Treatment of Hyperacidity of the Stomach.—Hewes (*Boston Medical and Surgical Journal*, November 29, 1900) aims to reduce

the acidity of the stomach by the administration of proteid food substances which combine with large quantities of acid, and by alkalies which neutralize the acid present. The patient is given a diet containing as high a proportion of proteid foods as comfortable for the individual. Six meals a day should be ordered, the constituents of each being prescribed. Starches should be limited and carbohydrate foods, sugars or predigested starches, dextrinized flours, used as much as possible since starch digestion in the stomach is impeded in these cases. For the distress or eructations, some proteid, as a raw egg, is to be taken. Sodium bicarbonate in half teaspoonful doses or 15 grns. of magnesia hydrate, may be taken in addition to or in place of it, for the relief of symptoms. Careful attention should be given to baths, exercise, the bowels and the general manner of living. Nuxvomica should be given if debility exists. Anemia is to be overcome by the administration of iron. Marked improvement occurs from this treatment in the majority of cases; less than 10% of the author's cases being unrelieved. In these obstinate cases lavage proved a useful adjunct to treatment. Sil-

ver nitrate was also used in some cases with success.—*American Medicine*.

For the relief of the symptoms above described many physicians recommend bicarbonate of soda in combination with Caroid, as prepared in the well-known form of "Caroid and Soda tablets," as follows:

R. Caroid, gr. j.
Sodii bicarb., gr. iij.
Menth. pip.,
Sacch. lactis, aa q. s.

M. Sig. 1 to 3 tablets after each meal.—[EDITOR.]

Some of the Properties of Oysters.—Oysters have for centuries been much esteemed by medical men as being very nutritious and easy of digestion, but both these properties are much diminished when the bivalves are not taken in their raw state. It may not be generally known that the fluid which surrounds the oyster bears a closer analogy to the gastric secretion than anything else in nature. In addition to the solvent properties of this liquid, it is not without its nutritive properties. We have of late devoted considerable attention both to the substance and the secretion emanating from it, and find that in a given weight of the latter and the same of the oyster, the fluid yields only forty per cent. less of animal gluten or jelly than the fish; consequently all persons who are accustomed to eat oysters should be ever mindful that as little as possible of the juice should be lost. To effect this purpose they should always be

opened in the bottom shell. When oysters are either stewed or scalloped the two properties, as before stated, are much diminished, and consequently oysters ought not, by invalids in particular, to be taken except in their raw state.—*Sanitary Record*.

When Should Patients be Advised to Eat Everything?

Boardman Reed says we should never advise our patients to "eat everything" until we have thoroughly cured their diseased digestive organs and freed them from the lithæmic condition; and powerful as are our modern weapons against these, we cannot often succeed in accomplishing such a radical cure until the patients have reformed their unhygienic habits, not only in their eating and drinking, but also in both their work and play. They must learn self-denial and at least the rudiments of the immutable laws of health, and having learned, obey them. They must take into their stomachs, in approximately right proportions, the things that will nourish and strengthen them, and little or none of those whose chief effect is to derange or irritate the functions or tissues of the body. In many cases, besides, they must give up sedentary employments or pleasures and take regularly, every day, an adequate amount of exercise out of doors. In short, oxygenation must be made to bear its proper ratio to alimentation. Nor should we advise even the well persons in the families under our charge to "eat everything,"

without some regard to their idiosyncrasies and tendencies, as well as a reasonable amount of care that they do not follow a harmful acquired taste for too much of the rich and complicated viands or such an undue proportion of nitrogenous food as would make patients of them a few years later, by setting up gradually insidious forms of chronic disease which would inevitably result, at a relatively early period of their lives, in gout or rheumatism, or in other more serious and fatal organic affections.—*Four. Amer. Med. Asso.*

—:o:—

THERAPEUTIC SUGGESTIONS.

PIN WORMS.

BY A. P. REED, M. D.,
NAPLES, MAINE.

Should there be evidence of much catarrhal inflammation, or should the seat of disturbance be high up in the intestinal tract, the removal of worms will frequently be found a troublesome and difficult task, although by persistence it can usually be accomplished. The treatment of this trouble should be both local and systemic.

Locally, for the itching, apply mercurial ointment externally, and use internally injections of an infusion of quassia chips. Make a strong tea of the latter and inject a pint or a quart at a time. If the difficulty is beyond the sigmoid, larger injections or high-up enema should be used. These injections should be continued for several weeks and be used twice a day—night and morning—at first.

If, after a little, they do not bid fair to prove effective, add one drachm of sulphate of iron to each pint of injection. After each action of the bowels, wash the external parts with soapy water, and then apply the mercurial ointment.

Internally, that is by way of the stomach, use the following prescription, which can probably be procured in tablet or pill form:

℞ Hydrarg. chloridi mitis.,
gr. 1.
Sodii bicarb.,
Santonin, aa gr. 2.
Podophyllin, gr. $\frac{1}{16}$.

The above quantity is for one dose, which should be used night and morning if necessary to get a free action of the bowels for the first few days. For their specific solvent and sedative action the following excellent tablets have been found most effective:

℞ Caroid, gr. j.
Charcoal,
Acidi borici, aa gr. iss.
Sacch. lact.,
Pulv. aromatic, aa q. s.

M. Sig. 1 to 3 tablets with each meal.

Care should be taken to eat nothing that does not digest well, as the stomach is usually disturbed early in these cases. It is best to eat lightly during the first forty-eight hours after instituting treatment. Persistence in the treatment, as above recommended, should free the system of these parasites.

—:o:—

The white skin that lines the shell of an egg is a useful application for a boil.—*Ex.*

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Feralboid and manganese, each tablet containing one-third of a grain of feralboid and one grain of the sulphate of manganese.

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A glance at this formula will convince the busy practitioner at once that in lyptol we have a most formidable weapon for combating a wide range of surgical conditions. It must be remembered that it is prepared exclusively for the use of the Medical Profession; in fact, if the manufacturers wanted to do so, a glance at the formula will show that it is too powerful to be used without the direction of the physician. It is put up in large glass jars containing one pound.

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OPINIONS OF OTHER JOURNALS.

Abbott reports the results of an impartial investigation of the remarkable claims made for Caroid under the supervision of the editorial staff of *Chicago Clinic*, and which fully sustains the findings of an earlier investigation made by Prof. Chittenden. Caroid, which is a vegetable pepsin obtained from the fruit of *Carica Papaya*, was found superior in every particular to animal pepsin. It is much more powerful, acts equally upon all kinds of food, is active in an acid, alkaline or neutral medium and is not easily unfavorably influenced by the many agents which interfere with the proper action of the normal digestive ferments. In short Caroid acts under conditions as they exist and upon whatever food encountered. The report shows that in six hours at ordinary office temperature, four or five grains of Caroid reduced one-quarter of a pound of raw beef steak to the consistency of a stiff salve. The experiment was repeated by adding dilute hydrochloric acid and again by adding bicarbonate of soda, with substantially the same results as above in both instances. Similar experiments upon mixed food showed that not a single element escaped the action of the digestant, even the fats were not excepted. Milk was first firmly curdled, then entirely dissolved and converted into soluble and assimilable products. The whole process was completed within three hours. The results in every

instance were in excess of those obtained from animal ferments.—*Philadelphia Medical News*.

To find an adult, man or woman, in this country who is free from some form of indigestion is almost as difficult as finding the proverbial needle in the hay stack. Even the children are afflicted and for this reason no class of goods handled by the pharmacist are such ready sellers as remedies for indigestion in its various forms. Unfortunately, hitherto, each form of preparation was limited in its action—pepsin and its preparations by reason of its inability to digest meats; diastase and pancreatin were useful only against indigestion of starchy foods, vegetables, bread, etc. Very recently a new and universal digestive ferment has been introduced—one which attacks with equal efficiency meats, vegetables, cereals, etc., thus uniting the functions of pepsin, pancreatin and diastase. This agent which is destined to be one of the most ready of sellers, is called "Caroid" from its origin, the *Carica Papaya* or exotic paw-paw, made by the American Ferment Co.—*National Druggist*.

The claim made by the manufacturers of Caroid for their preparation is that it "will readily digest all varieties of food of every nature and kind whatsoever. It produces the combined results of saliva, gastric and pancreatic juices. Promptly converts starch. Acts in either an acid, alkaline or neutral medium. Can be combined with antiseptics without de-

stroying its digestive properties. It acts vigorously upon all diseased tissue, but does not act upon the living tissue. It cleanses the stomach walls, leaving them in an absorptive condition; removes the mucus from the alimentary tract and promotes the generation of the natural digestive fluids. It is thus a remedial agent in the true sense.

Caroid will digest more food in less time than any ferment, either vegetable or animal, thus far discovered. Pepsin can be combined with but few drugs without destruction of the ferment, whereas Caroid can be combined with practically all drugs without materially affecting its digestive action."

These are very impressive assertions to make for this new digestive ferment, still the long experience of the members of the American Ferment Company, in the manufacture of vegetable ferments should enable them to speak authoritatively.—*The Dietetic and Hygienic Gazette*.

Caroid is receiving just recognition from the profession for its value as a digestive ferment. It is a highly concentrated extract from the paw-paw, and being of vegetable origin, is clean and pure. It will digest all varieties of food in either acid, alkaline or neutral medium. It can be combined with antiseptics without destroying its digestive properties. It cleanses the stomach walls, removes mucus from the alimentary tract, and promotes the generation of natural digestive fluids. It will destroy diseased tissue, but

not act on living tissue. Its range of usefulness, then, extends from the treatment of stomachic and intestinal disturbances, including indigestion in all its forms, to surgical practice, because of its action on diseased membrane, etc. It is given in powdered form, placed upon the tongue and washed down with a wineglass of water. In comparing its action with pepsin one is struck with the rapidity of action of Caroid and further, its wide range of drug combination, it being possible to combine it with all drugs without disturbing its action.—*Medical Fortnightly*.

Caroid, the new vegetable ferment derived from the Carica Papaya, is a scientific preparation of great merit. It possesses special value because of its prompt action upon the digestive organs, quickly dissolving mucus, thus permitting the food to come in direct contact with the fluids of the digestive apparatus. Artificial digestives as a rule, have a tendency to make the stomach lazy, but Caroid evidently exerts a most beneficial effect upon the alimentary tract. While it readily digests more food than any other ferment (and by food I mean the daily average diet of the average person) definite experience shows that its effects are lasting, not temporary. From this I conclude that it is indeed a remedial agent. It can be placed in combination with all other medicaments, which is a matter of great convenience to the medical practitioner. Then again, it acts in acid, alkaline and neutral media.—*New England Med. Mon.*

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MELLITUS**

(IN THE PRACTICE OF
ELEVEN PHYSICIANS ALONE)

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Infant Feeding Number.

The Alimentary Review

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A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

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CAROID in action is independent and resourceful. It digests all food (including starch) in all media (acid, alkaline or neutral) acting throughout the whole digestive tract.

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JERSEY CITY, N. J., DEC., 1901.

No. 2.

ORIGINAL ESSAY.

INFANT FEEDING.

"In reviewing the immense amount of literature which has accumulated on the subject of infant feeding, we find that the superiority of breast feeding is acknowledged so generally that it may be said to have become a scientific truth. On the other hand, the opinions expressed regarding artificial feeding are so diverse, and so opposed to one another, that it is evident that much which has for years been taught must be unlearned, or rather admitted to be untrue, before we can expect to make any intelligent advance in this most difficult subject."—*Rotch*.

In the decade which has elapsed since the above statement appeared (Cf. "Keating's Cyclopædia of the Diseases of Children," Vol. 1, 270) no subject has received greater attention at the hands of the profession, in the way of scientific study and clinical experiment, than has that of "infant feeding," whose generous bibliography is unequaled by that of any other branch of medicine; and, while important advances have been made in our knowledge of the composition and preparation of substitute foods,

especially from a chemical and bacteriological standpoint, yet a critical review of recent textbooks and magazine articles reveals the fact that the same diversity of opinion, regarding details in the methods of artificial feeding, exists to-day among specialists as well as the rank and file of the profession, as that which was complained of by Prof. Rotch ten years ago: therefore, we feel justified in heading our article with the above-quoted expression of this author's pessimistic views. In other words, we believe now as did he then, that much which has been taught and accepted as truth (even during the past ten years) "must be unlearned, or rather admitted to be untrue," ere we shall come to an intelligent understanding and agreement upon this important subject.

Concurrence of Opinions.—It is agreed that, inasmuch as breast milk is the child's natural food, it should serve as the standard by which to judge artificial foods; and, it is the generally accepted opinion, that, if for any sufficient

reason the babe cannot be nursed, the most practical substitute food is cow's milk. The only mooted question is—how shall it be prescribed? Regarding this point, there is great discordance of views; but we believe it is now admitted by pediatric specialists and by every general practitioner of experience, that the milk should be diluted or modified so as to correspond as nearly as possible with mother's milk in the proportion and amount of its chief constituent parts—i. e., its proteids, fat and sugar. The analysis of breast milk shows that these three essential ingredients are present in the following approximate proportion: proteids 2, fat 4, sugar 7; while in cow's milk they are found as follows: proteids 4, fat 4, sugar $4\frac{1}{2}$.

It will be seen that in modifying cow's milk the proteid must be reduced one-half by diluting the milk. This reduces the fat and sugar also. Hence fat and sugar must be added. The theoretical problem, therefore, is simple: Reduce the proteid by diluting the milk; increase the fat and sugar by adding those elements. To accomplish this purpose, it has been customary to dilute one pint of milk with an equal quantity of water; but as the already deficient amount of sugar has then become still further reduced (to $2\frac{1}{4}$), the deficiency is made up by adding a tablespoonful of granulated sugar or milk sugar to one pint of the mixture. As fat has also been reduced one-half (to 2), a small quantity of cream is generally added.

Another point upon which physicians agree is, that milk from the herd is better than one cow's milk, on the ground that it is less likely to vary in its composition from day to day. Again, it is admitted that sanitary conditions should be insisted upon at the dairy and due precautions be taken to prevent bacterial infection. Not only should the cows be kept clean and healthy, but cleanliness should be observed by the men themselves at the time of the milking, while the various pails, cans, bottles, etc., should be made perfectly sterile. In other words the profession is now awakening to the importance of obtaining *clean milk*—that which is fresh from spore-bearing bacteria.

The majority of physicians are now convinced, from clinical experience, that diluted "condensed" milk is unfit for infant feeding,—its prolonged use very frequently producing rickets. A dilution of 1 to 12, the one most commonly used, contains but $\frac{1}{8}$ the amount of fat and $\frac{1}{3}$ the amount of proteid of average breast milk. Double that strength contains but $\frac{1}{4}$ the proper amount of fat, but the amount of sugar is so excessive as to soon upset the stomach. It is evident, therefore, that a food so wide of the standard is not a proper one for the infant. The practice, too, observed now at some dairies, of using chemical preservatives in milk such as borax, boric acid, formaldehyde, etc.,—is universally condemned as harmful.

Diversity of Views.—Concerning the best mode of modifying cow's milk so that it may resemble breast

milk, not only in the proportion of its constituents but in its digestibility,—even our most eminent pediatricians are at loggerheads: one advocating “laboratory,” and the other “home” modification, in both of which methods the strength of the mixture may be varied according to the “percentage” of ingredients. Among those prominent in pediatric circles who have advocated laboratory feeding, will be found the names of Thomas, Meigs, Rotch, Zahorski, etc., while on the other hand, Crandall, Chapin, Fischer and others, suggest certain methods of home-feeding which are considered equally scientific, and far more practical.

It will be found, too, that while some authorities favor the adoption of a process which effectually destroys bacteria and inhibits certain fermentative changes,—i. e., by sterilizing, pasteurizing, etc.,—the majority of specialists are opposed to this procedure and recommend feeding upon fresh “raw” milk, which has been immediately cooled and kept at a temperature below 50° F. Then, too, many physicians believe it is unwise to add to the mixture any ingredient (especially of a vegetable nature) not found in normal breast milk, while others recommend the employment of certain cereal infusions as diluents. Again, while certain proprietary milk-foods are advocated by the general practitioner, the majority of specialists condemn each and all such foods in unmeasured terms.

From the foregoing observations, it will be seen that the problem of “infant-feeding” is still in a maze

of doubt and perplexity, and the physician who is anxiously searching for the correct solution will be the greater confounded the more he investigates the subject. It is our purpose, therefore, to present as briefly as may be, the suggestions offered by certain prominent specialists, whose opinions must command respect, and leave it to the judgment of each individual reader which method he selects as being likely to prove most effective in actual practice.

Laboratory Feeding.—Since the establishment of the first modified milk laboratory, in Boston, in 1891, similar laboratories have been established in twelve other cities of the United States, besides three in Canada and one in London. Under the management of Messrs. Walker and Gordon (whose names these institutions bear), working under the scientific direction of Prof. Rotch, the system has been developed to an extent little dreamed of in the beginning, so that it is now possible for a physician to obtain any combination he may wish, and to have his directions carried out with the same care and accuracy with which his prescriptions are filled at the drug store. That is to say, the different constituents of milk may be varied at pleasure according to the judgment of the physician—accuracy in the modification being thus assured. The chief function of the laboratory, then, is to fill prescriptions calling for certain percentages of fat, sugar and proteids, or anything else which the physician may desire to add,—e. g., cereals, mineral matters, malt, pancreatin,

patent foods, etc.,—or the milk may be ordered sterilized, pasteurized or raw.

The general principles to be observed in laboratory feeding are, of course, those of percentage feeding in general. The most important indications according to which the percentages of fat, sugar and proteids are to be varied may be summarized as follows: Habitual vomiting or regurgitation is almost always due to an excess of fat or to over-feeding; and for an infant with such symptoms, the percentage of fat must be reduced as well as the quantity of milk. If the patient is not gaining in weight, and yet has no special signs of indigestion, the rule is to increase the percentages of all the ingredients. "Habitual colic," says Holt, (*Cf. N. Y. Med. Jour.*, Jan. 12, 1901), "is nearly always from an excess of proteids. For such a condition one should not give more than one-third as much proteids as fat, and usually at first very low percentages. This condition is commonly associated with the presence of curds in the stools, which requires the same treatment." For obstinate constipation, increase both fat and proteids. Something should be said, however, regarding the changes required in milk modification during very hot weather. At such times both the proteids and fat must be reduced but particularly the latter. It is seldom wise in any case, even with perfectly healthy children, to have the fat in the summer months over 3 per cent. and during short periods of excessive heat it should be reduced to

2 per cent. It is a good rule to begin with very young infants, with low percentages, especially of the proteids, which should not be above .50 per cent. for the first two weeks of life, and some authorities say .25 per cent. Fats and sugars should also be moderately low, about 2 per cent. for the former and 5 per cent. for the latter. Of course, much older children sometimes require these low percentages; but for a short time only.

Home Feeding.—The prime object in modifying milk is to obtain a mixture upon which the infant will thrive, and many prominent pediatricists have become satisfied from clinical experience that if care be taken to select good cow's milk, in which the growth of bacteria has been prevented by cooling, and due observance has been had in regard to cleanliness, etc.,—that the modification of milk (with reference to percentages) may be employed with the same accuracy and much more practically at the home of the patient by devoting attention to certain important points: It is well known, for instance, that the fat in milk, which has stood a short time, rises gradually toward the surface and eventually forms cream; so that there is a period during which the percentage of fat exists in regularly increasing ratio, advancing from the bottom toward the top. Advantage has been taken of this fact, and the following plan adopted for obtaining certain percentages:

The milk (rapidly cooled and strained after milking) is put in sterilized quart bottles, such as

dairymen use, and kept so until used—standing in the ice chest from 12 to 24 hours. The upper portion of the milk is now richest in fat, which has disseminated itself from below upwards, and any percentage desired may be calculated from the following table:

9 ounces top milk,	12% fat,	4% proteid.
11 " " "	10% " "	4% " "
15 " " "	8% " "	4% " "
20 " " "	6% " "	4% " "

The top 9 ounces (or more, as the case requires) of cream and milk are removed by using Chapin's one ounce dipper; and, after proper dilution with water or otherwise, and the addition of sugar, it is ready for feeding. If we wish to make a mixture containing proteid, fat and sugar, in the proportion of 2, 4, 7, (the proportion found in breast milk), we require a top milk containing twice the amount of fat desired,—i. e., 15 ounces top milk. The method, then, is exceedingly simple. The top fifteen ounces are dipped out, diluted one-half, and the required amount of sugar added (usually a tablespoonful to the pint, or one ounce to twenty ounces of the mixture). The mixture then contains proteid, fat and sugar, in the proportion of 2, 4, 7.

The importance of procuring clean milk cannot be overestimated, and if the same care be taken that only the best shall be used, as is observed in the Walker-Gordon laboratories, there is no reason why the proportions should not be made as accurate in home-feeding as in laboratory feeding. The fitness of milk for infant's food depends largely on the percentage

of lactic acid present, and on the number of bacteria to the cubic centimetre. In the words of a prominent chemist: "Lactic acid is due to the 20 varieties of bacteria out of 200 that may be present in milk. The lactic acid bacteria come from the teat of the cow, and can be largely eliminated by throwing away the first few streams when milking. Pathogenic bacteria get into the milk through the water used in cleaning the vessels, or from persons who handle the milk. Putrefactive bacteria come from the manure. Great care should be taken in cleansing the udder and teats before milking, as well as the hands and finger nails of the milker, who should wear a duster over his working clothes. The stables should also be clean." The general practitioner is now awakening to the supreme importance of this subject, and the future is likely to witness improved methods in the production as well as in the distribution of milk throughout the country.

Sterilization.—Pediatrists are now practically agreed that sterilized milk is unfit to be used for any length of time as an infant's food; but the general practitioner, who is somewhat rusty in his chemical knowledge, has been slow to recognize the fallacy of the method, and many physicians have yet to learn that heating milk to a degree necessary to effect its sterilization (i. e., to destroy existing bacteria) must necessarily produce chemical changes therein, which will seriously interfere with its nutritive properties as well as its digestibility. Recent investigations have shown

that milk raised to a temperature of 100° C. is altered in the following particulars:

1. Its proteids are modified and rendered less digestible; i. e., the lactalbumin and globulin are coagulated, and the casein so altered as to increase its resistance to the disintegrating action of the gastric ferments.

2. The combination of its saline ingredients with the proteids is more or less broken, and the salts assume a condition in which they are less readily absorbed; i. e., the lactose is partially changed and the organic phosphorus is converted into an inorganic phosphate, both of which changes interfere with the digestibility of the milk. Wroblewski has shown, too, that certain of the calcium salts, necessary for the coagulation of the milk in the stomach (and which in raw milk are in a soluble state) are made to enter into insoluble combinations by a high temperature.

3. Natural ferments which are present in milk, and which naturally assist its digestion in the infant's stomach, are destroyed: Russell and Babcock having proved that unsterilized milk undergoes a self-digestion owing to the presence of a trypsin ferment readily destroyed by heat.

4. Alteration in the normal emulsion in the milk also takes place from the action of heat, lessening its digestibility.

5. Observations point to the fact that immunity to disease may be conveyed through the mother's milk and that such immunity—confering substances (present in raw milk) are destroyed by a heat of 60°

C. or over, thus rendering children, fed exclusively on milk sterilized at a high temperature, more liable to certain infections leading to disturbances in general nutrition.

6. Clinical experience has shown that such affections as scurvy and rickets, and other disorders of malnutrition, may result from a diet, from which raw, fresh food is excluded.

In his work on "Infant Feeding," recently published, Prof. Louis Fischer devotes considerable space to and emphasizes the necessity of feeding with cow's milk in its "natural state"—i. e., *feeding with raw milk*. "This," says one prominent author, "seems off-hand like a broad statement, but when we consider that breast milk is "raw milk", and that we are simply copying from nature by feeding, then we can readily see the vast importance of this method of feeding. Clinical evidence is certainly in favor of feeding milk in its raw state owing to its antiscorbutic qualities, and besides it does not cause that terrible bug-bearer of the beginner and possibly also the older practitioner, viz. —constipation."

Does it not, then, seem better to aim in securing *clean* milk and applying the principles of sterilization, or, if you prefer the term, pasteurization, to the stable, to the milker's hands, and to all utensils coming in contact with the milk from the beginning to the end of the milking? In this manner we do away with the possible contamination of the milk with stable and other filth, and avoid infection with micro-organisms.

Diluents.—No phase of the infant-feeding problem has been studied so assiduously, or created so much controversy, as has the vexed question of "diluents"; and, while all authorities are agreed that cow's milk should be diluted with something to bring down the excess of proteid, yet there is great diversity of opinion as to which is the best agent to use for this purpose. Simple dilution with water has been recommended by some; others suggest the addition of an alkali, such as plain or saccharated lime-water; one prominent pediatricist favors a decoction of gum-arabic or solution of gelatine, as a diluent for very young infants; and another equally noted specialist argues strongly in favor of cereal infusions. It is our purpose here to call attention to the latter method, which is probably more extensively employed than any of the others, and give, in brief, the reasons advanced for its use, by its chief promoter, whose name is favorably known in pediatric circles over the entire world.

In a paper, entitled "The Place of Cereals in Infant Feeding," read before the American Pediatric Society, at Niagara Falls, May 28, 1901, Henry Dwight Chapin, M. D., of New York, recommends for use as a diluent in home modifications a predigested cereal gruel made as follows: "Make into a paste two tablespoonfuls of wheat or barley flower with cold water, and add to a quart of water. Boil fifteen minutes; add a pinch of salt. When cool add to this a preparation of diastase. Cereo (a glycerite of diastase) is

especially recommended, two teaspoonfuls to the quart. Of this diluent, now dextrinized, add three parts to one part of the 'nine ounces of top milk'; add the sugar, one part to twenty, and you have a humanized milk."—"On the theoretical side," says this author, "it must be confessed that, at first sight, the employment of a material in a form not found in human milk may appear unwarranted to those who desire a strictly scientific reason for all procedures."—But, we may add, if it can be shown that the curd of cow's milk is thus rendered more digestible, a strong reason appears for its employment.

The introduction of system into infant feeding has been a great advance and has doubtless come to stay, but it has also emphasized the fact that changing the percentages in cow's milk to correspond with those in breast milk, *does not change cow's milk into woman's milk.* Changing the percentages of proteid, fat and sugar, in cow's milk, to equal those of woman's milk simply records the quantities of those ingredients in *cow's milk.* While we must admit the importance of effecting this agreement (i. e., in the percentages of these three essential ingredients), and believe that it should always be accomplished, yet we must not remain blind to the fact that one of these ingredients of cow's milk—viz., the proteid is not of the same *nature* as that of mother's milk. In other words, the proteid in the latter is one part casein to two parts albumin and globulin; while, in cow's

milk, the proteid is composed of four-fifths casein. Inasmuch as albumin and globulin are readily soluble and easily digested and absorbed, while casein is insoluble and must undergo certain transformations before it can be absorbed, it will be seen that the proteid of cow's milk ($\frac{4}{5}$ casein) requires more digestive effort than the proteid of woman's milk ($\frac{1}{3}$ casein).

As may be seen, the amount of curd formed in milk depends upon the proportion of casein present, and the less bulky the curd the more easily digested is the milk. White and Ladd, of Harvard, as a result of their experiments, have arrived at the conclusion that, by the use of whey as a diluent of creams of various strengths, they are able to modify cow's milk so that its proportions of casein and soluble (whey) proteids will closely correspond to the proportions present in human milk—thus rendering it much more digestible and suitable for infant feeding. They claim that whey cream mixtures yield a much finer, less bulky and more digestible coagulum than plain modified mixture with the same total proteids. They admit, however, that barley water mixtures yield a coagulum equally fine. It will be seen, therefore, that it is to break up the curd of cow's milk, and thus furnish a small quantity of easily absorbable food, that cereal gruels (in which the starch has been converted into dextrin and maltose) are advocated as diluents; it having already been shown that the curd of cow's milk, with a digested gruel diluent,

passed through a sieve having 900 meshes to the square inch, while those with water diluent remained on the sieve. How much effect a digestive gruel has on the curd of milk depends, of course, on the strength of the gruel and the dilution of the milk.

Thus, after years of careful study and experiment, it has been found that cow's milk may be so modified as to correspond very closely to mother's milk, not only in the relative proportions of its total constituents (proteid, fat and sugar), but also in the composition of the proteid itself,—the casein being so reduced that a much less bulky curd is formed which is more easily digested. It is for this latter purpose that White and Ladd's "whey mixtures" and Chapin's "cereal infusions" have been recommended; and, though experience has proven that they are advantageous in many cases, yet the fact remains that, though the curd has been reduced in amount, it is not of the same *character* as that formed from mother's milk; i. e., it is still often regurgitated from the infant's stomach in hard, lumpy masses. To overcome this latter difficulty, after many expedients have been tried and nothing found that the patient will tolerate (and where there is little time for further experiment), the following plan may always be adopted and for the reasons herein after given:

Caroidization.—There are two great classes of milk: 1st. Those that form hard, solid curds with rennet—cow's milk. 2d. Those that form soft, flaky curds with

rennet—woman's milk. In other words, the rule seems to be that animals that ruminate, furnish their young with milk that curds in solid lumps, and animals that masticate their food before swallowing it, furnish their young with milk that curds in soft flakes. The human stomach receives food in a finely divided state, and woman's milk curds in loose flakes.

Dr. Brush has explained this property of forming hard curds as belonging to the milk of all cud-chewers in contra-distinction to the softer and more flaky curds of the milk of those animals which are not cud-chewers. He says: "The young of the former all chew the cud soon after birth, therefore the milk designed for their use contains a variety of casein which coagulates into a mass sufficiently hard and consistent to be regurgitated and chewed." Furthermore, it has been shown by analysis (Cf. Richmond's "Dairy Chemistry") that the milks that form solid curds with rennet are furnished by animals whose normal digestion is *prolonged* and whose alimentary canals are relatively very much longer than those animals whose milk forms soft flaky curds. It is evident, therefore, that the human infant's stomach is likely to find difficulty in digesting the casein of cow's milk (even when present in the same proportion as in mother's milk) unless it is first partially broken up so as to form a fine flocculent curd—easily disintegrated and rendered fit for absorption.

It has been found that during digestion there is an increased

elimination of nitrogen from the system which is proportional to the intensity of digestive work; also an increase of about fifteen per cent. in the quantity of oxygen consumed and a larger increase of carbon dioxide thrown off. This shows an immediate demand for proteids and carbohydrates at the *beginning* of a meal; and it is known that when milk is taken into the stomach, the first step in its digestion is a separation of the easily absorbable albumins and sugars from the casein and fat, which require digestion as they are left in a semi-solid state.

It will thus be seen that the increased demand for proteids and carbohydrates, during digestion, is met by a separation of the soluble constituents of the milk as soon as it is swallowed. Furthermore, the secretion of all the digestive juices is promoted by this absorption at the beginning of the meal; i. e., the normal digestive process is ushered in. This is what happens when woman's milk is taken. But when cow's milk diluted with water is given to an infant, the quantity of readily absorbable food is reduced to almost nothing, and the proteids and fat form a solid curd which is either regurgitated or passes on into the intestines to ferment and serve as a source of irritation. The result of this process, if continued, is to interfere with the secretion of the digestive ferments; and milk which enters the stomach finally meets with the same reception that it would if it were injected into the rectum; i. e., it remains unabsorbed because its insoluble constit-

uent (casein) has not been changed into (soluble) peptone. Every practitioner of any experience knows, that, in feeding by the rectum, the milk must first be peptonized—or it will not be absorbed.

For the same reason, in many cases of infantile mal-digestion, the casein of cow's milk must be put into a partially digested or soluble condition before its administration; i.e., it must be acted upon by a ferment. The value of barley water and other cereal infusions, in breaking up and making the curd soften, is due to the action of the starches and diastasic ferments which they contain. The food that is most finely divided and can most easily leave the stomach is the most suitable for weak digestions. Digestive enzymes act by contact and neither take away nor add anything to the substance acted upon. For this reason, a pure vegetable ferment, like Caroid, is superior to a cereal infusion, which adds starch, cellulose and other constituents to the food, which must themselves be digested.

In all cases of faulty digestion, therefore, caused by the formation of insoluble curds in the infant's stomach, Caroidized milk prepared as follows will be found of the greatest utility: Heat the purest, freshest cow's milk obtainable (modified as suggested under "home feeding") until lukewarm, then stir two or three grains of Caroid into it, and when the curd has set (which will be within two or three minutes) beat it up until it is almost re-liquefied. Re-warm this if necessary, and feed through a

nipple as in ordinary bottle feeding. After the Caroid has been added, the milk must not be allowed to stand very long, as it will acquire the bitter taste characteristic of the formation of peptone. Each feeding should be prepared separately, therefore, and should be fresh.

The advantages of the above method are: 1st. That it is impossible to re-curdle milk thus treated, hence tough and indigestible curds are avoided. 2d. Digestion will go on in both the stomach and intestines until the casein is entirely absorbed, the process being assisted partially by the digestive apparatus of the infant.

As hyperacidity usually prevails in the infant's stomach in cases of maldigestion, some physicians prefer to neutralize this condition, by adding lime water to the milk in the proportion of one to four. This may also be done with Caroidized milk. An efficient substitute for lime water is the "liquor calcis saccharatus" of the British Pharmacopœia; from five to fifteen drops of this solution being added to each half pint of the milk mixture.

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EDITORIALS.

RENNET IN INFANT FEEDING.

The fact that the proteid of cow's milk makes hard coagula, not easily penetrated by the digestive fluids, while the curd of woman's milk is soft, has led to much speculation of late as to the best method of preparing the milk for bottle-fed infants. Attention has recently been called to the announcement of Von Dungern, that the addition of a little rennet to milk rendered it infinitely more digestible, absolutely preventing the formation of large curds in the stomach.

It is claimed that enough rennet can be taken up on the point of a knife for 200 gm. of milk. It is added to the blood-warm milk in the bottle and shaken once, then placed in warm water for five or ten minutes until the milk clabbers. The bottle is then vigorously shaken until the clots are broken up into minute flakes, when it is ready for use. Prof. Siegert, of Germany, has been testing this

method on a large scale and considers it a distinct advance over any other plan yet adopted. From his experience with more than fifty infants during the last six months he strongly recommends it to all physicians. The results in his experience have been invariably satisfactory. Milk thus treated, he says, is equally adapted to older, dyspeptic or debilitated children or adults.

No fault will probably be found with the above suggestions from a theoretical standpoint, and no doubt this method of digesting the curd would be received with favor were it not for the fact that a chemically pure rennet is practically unobtainable. The majority of physicians will continue to try the efficacy of cereal gruels or other diluents, rather than to risk failure from the use of an agent whose enzymotic action cannot be depended upon. The same effect in coagulating the curd, however, can be had with Caroid as with rennet, and without this objection on the score of inertness. Two or three grains of the former, used in the manner above suggested, will be sufficient for use in a single feeding, and may be repeated at each subsequent feeding. As a ferment for use in general practice, it has the advantage over rennet in possessing both proteolytic and amylolytic properties and may therefore, be employed as a diges-

tive for the various foods prescribed after the weaning period.

PEPSIN VS. CAROID: THEIR THERAPEUTIC APPLICATION.

The exact physical and chemical conditions under which pepsin digestion can take place within the body, are present only during perfect bodily health, when, of course, an artificial aid is not needed. Disease deranges these conditions, (e. g., too much or too little of hydrochloric acid, or of liquids, or of neutral salts, etc., etc., will be present) and consequently the natural digestive ferments, though perhaps still present, fail to perform their appointed task, and maldigestion ensues. It is obviously illogical, therefore, to expect that a further supply of animal pepsin, which is to be subjected to these same deranged conditions, can remedy the evil. What is wanted to produce artificial digestion in most cases, then, is either a restoration of the normal conditions under which the animal ferments do their work (a task difficult to achieve), or a digestive agent that acts regardless of all these conditions, on all classes of food products, throughout the entire digestive tract. Such an agent has been found in Caroid.

The digestion of food, *especially of proteids* in the stomach and intestines must be considered a

chemical process, and not a mere solution of substances. It has been suggested that the transformation of albumin or fibrin into peptone partakes of the nature of the action of saliva on starch; i. e., an hydration, but the physiologists are now generally agreed that the change is more than the mere disintegration of the particles composing the mass; that there are, in fact, combinations and recombinations resulting in an entirely new molecular arrangement.

And this chemical change is not accomplished at once, but is the result of a series of minor changes taking place at different times, in different places, and in cooperation with different agents. In other words, digestion of proteids as it now exists in the higher forms of animal life is an exceedingly complex chemical process, and requires the nicest adjustment of the several parts relative to their respective environments and to one another. In febrile conditions for instance, the normal acid is deficient, while in uræmic or lithæmic conditions there may be present in the stomach urea and ammonium carbonate. Under such changed environments, the proper action of the several parts is interfered with resulting in the incomplete or irregular chemical process as a whole and the end is maldigestion. The introduction of more pepsin, (which, already, may be sufficient

in amount) to meet the same ter the food has passed the pylor-changed conditions, is obviously us. Furthermore, it must be unnecessary and can only cause dis-membered, in comparing pepsin-appointment as far as the thera-and Caroid action, that H. Cl does-apeutic results are concerned. As not exist ordinarily in the empty-stated above, an agent is wanted stomach, its secretion being stim-which will perform, or assist in per-ulated by the introduction of food.forming the work required irre-For a period, then, after food is-spective of its chemical surround- introduced into the stomach (usu-ings. Such an agent is Caroid. ally half an hour), the reaction is

alkaline. This is the first check Stomach analyses, lavage, test for pepsin, but entirely favorable meals, etc., determined during the to Caroid which acts in alkaline past ten years in thousands of ex-media better than in acid. The-periments, have demonstrated the- second set back for pepsin occurs- fact that in a large majority of- when there is maldigestion, in- cases of maldigestion, the trouble- which case, in a large majority of- is due to one of two causes, i. e.,- instances, the secretion is too- either to a deficiency of H. Cl, or- small for pepsin to act, a condition- to a deficiency of pepsin. A third,- favorable to Caroid, as it acts well- and rare cause, is an excess of H.- in neutral media.

In considering, therefore, the- must be borne in mind, however, peculiarities of animal ferments- that without an analysis of the (pepsin, pancreatin, etc.) the prac- stomach contents, it is difficult to- tical deduction is, that they are- determine whether maldigestion in- rarely indicated as aids to diges- the stomach is due to deficiency of- tion. On the other hand, the veg- H. Cl or of pepsin, although gen- etable ferments, especially Ca- erally there is a deficiency of H.- roid, owing to their independent- Cl. (Cf. Prof. J. M. G. Carter, in- action may be used with effect in- *The Med. Fortnightly*, April 25, the majority of such conditions. 1901; A. E. Austin, M. D., in the- Another point in favor of Caroid is- *Med. News*, Nov. 24, 1900, etc.)

that it is not impeded by the prod- In considering the treatment of- ucts of its own activity, as is the- dyspepsia, it must also be borne in- case with the animal ferments. In- mind that animal pepsin is at best- studying the proteolytic action of- only a preparatory ferment; that- pepsin, it will be observed that its- no absorption occurs in the stom- partially peptonized product tends- ach; that the digestive process is- to encyst or encase food particles,- completed, and absorption of the- thus preventing the furtherance of- simplified products takes place, af-

the digestive process to a certain extent. With Caroid, on the other hand, the dissolved portions or peptones, fall away from the food attacked, and as the latter is left exposed to the direct action of the ferment, the process of disintegration is speedy and effective.

Clinical experience has shown that H.Cl should not be given with Caroid, which acts well in the normal acidity of the stomach, but better in neutral or alkaline media. As is well understood, there is generally, in maldigestion, a deficiency of H.Cl, and this is a benefit to Caroid action rather than the reverse. When the condition is one of hyperacidity therefore, an alkali taken in conjunction with Caroid, as appears in the following combination, will be found an advantage.

℞ Caroid, gr. j.
Sodii bicarb., gr. iij.
Menth. pip.,
Sacch. lactis, aa q. s.

These ingredients have been combined in the form of tablets, one to three of which may be given after each meal. In regard to the administration of an acid, it is evident that whenever H. Cl will restore peptic action (sufficient pepsin being present), it should be given without a ferment.

Practice is the field of which tact is the manure.—*Ex.*

"CAROID SOLVENT."

The power of Caroid to dissolve and peptonize fibrin has led to its employment by many eminent specialists in the treatment of certain affections of the eye, ear, nose, throat and skin, wherever the action of a tissue solvent is required. It has been found especially effective for the softening and removal of hardened and tenacious secretions in the naso-pharynx, the false membrane in diphtheria, and even for the removal of powder stains and tattoo marks upon the skin.

A five per cent. solution of Caroid, freshly prepared, may be used in an ordinary atomizer for the purpose of spraying the nasal and aural passages, but owing to the fact that the powder contains more or less albuminous matter not readily soluble, a clear solution of the ferment that will not clog the holes of sprays or syringes is difficult to obtain. Watery solutions, too, quickly spoil, which necessitate a fresh solution for each application. For these various reasons the "Caroid Solvent," specially prepared by the manufacturers for use as a physiological solvent, will be found more convenient and satisfactory for application to cavities than other forms of the ferment. The "Solvent," as thus prepared, is a purified solution of the proteolytic enzymes of the *Carica Papaya*, and

is in every respect the most effective agent that can be employed for the cleansing and removal of all dead organized tissue, pus or various tough and fetid secretions.

Thus far, the use of the "Solvent" has been restricted largely to the practice of the specialist, but many general practitioners are now beginning to recognize its clinical value and have commenced its employment in their daily work. The following letter was recently received by the manufacturers, from a well-known ophthalmologist in one of our large eastern cities, and is submitted here as an illustration of the type of cases in which this remedy is being used:

"The American Ferment Company.

Sirs: In reply to your favor of the 2d inst. [July], I would say that I have used the sample of Caroid Solvent received some time ago from you, and am much pleased with the result.

I have used it in cases of marginal blepharitis of lids, corneal ulcers and old opacities, the result of corneal ulcers. My trials have been somewhat limited, but as far as I have gone I am much gratified with the results. One case I will mention in particular, as it is the case on which I have used most of the sample sent me:

The right cornea of this patient was hazy, the result of a trauma following corneal ulcers. When he came to me the vision of his right eye was $\frac{20}{100}$. After one month's treatment of the application of Caroid Solvent to the cornea every other day, his vision had increased to $\frac{20}{80}$, and after another month's treatment his vision was $\frac{20}{20}$, that is without any correcting lens. For a number of years he had been troubled every month or two, and sometimes more frequently with a corneal ulcer. I started treatment last January and since then he has had a return but once, of the corneal

ulcers, and that was when he was away and did not have any treatment. After he came back, I applied the Caroid Solvent directly to the ulcer and in ten days it was healed. It seems almost like a fairy story, but it is true.

I have used the Caroid Solvent also in purulent otitis media with good results. As I said before, I am much pleased with the results so far as I have tried the remedy. I used the sample with the greatest of care, as I wanted it to last as long as possible. I finished the last drop to-day on the case of a girl with powder burns of cornea and conjunctiva. What results I will get from this one treatment I do not know, as I will not see the case until to-morrow.

I do not know whether I can get the Solvent in this city. Perhaps you had better send me another bottle and I will pay you for it, or else tell me where I can get it here. Do not publish my name to any remarks you may make, for I wish to make a further study of this remedy, and will report more fully then. Thanking you for the sample you were so kind to send me, I am
Very truly yours."

Among other prominent specialists who have used the Solvent in their private work and recommend it highly, we may mention Prof. Ohmann-Dumesnil, of St. Louis, and Dr. Arthur G. Hobbs, a well-known laryngologist, of Atlanta, Ga. The latter has employed it with exceptionally gratifying results as a solvent in atrophic rhinitis and other naso-pharyngeal diseases characterized by tenacious or fetid secretions; and also for the removal of the false membrane in diphtheria. Dr. Hobbs states, that while in Europe during the past summer, he mentioned his method of using Caroid as a local solvent to several laryngologists in Berlin, and also in London and Paris, and all of them

who were at all acquainted with the remarkably solvent properties of the drug were struck with this idea of its utilization and were ready to give it a trial in their throat clinics.

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CORRESPONDENCE DEPARTMENT.

Our readers are cordially invited to make free use of this department. Queries regarding the enzymotic action of vegetable ferments and their use in the treatment of disease—or any other question which comes within the scope of *THE ALIMENTARY REVIEW*—will be cheerfully and promptly answered. We also solicit clinical reports illustrating the action of the vegetable digestive, Caroid, in the treatment of cases, and will be glad to publish the same in this department for the benefit of our readers who may wish to further investigate the subject. Answers to questions of a medical nature will be given only to medical men.

Letters intended for this department should be addressed to "Editor *ALIMENTARY REVIEW*," care of The American Ferment Co., 81 Steuben St., Jersey City, N. J.

ITS PROTEOLYTIC AND AMYLOLYTIC ACTION HAS BEEN DEMONSTRATED.

The American Ferment Company.

GENTLEMEN: Referring to the digestive power of Caroid, permit me to ask what evidence you have that the products of the action of this ferment on meat, etc., are

in reality peptones one particle nearer a condition for being assimilated than the original meat?

Respectfully yours,

J. T. MELVIN, M. D.,
Saguache, Colo., Feb. 20, 1901.

ANSWER: To this we answer that the products of Caroid action upon proteids and starch are known to be peptones and sugar, because these facts have been demonstrated over and over again during the last four or five years by many competent authorities, by the application to these products of the well-known chemical tests that determine the presence of peptone and sugar. That the action of the Carica ferment upon albuminoids results in the production of peptones, was first demonstrated by Wurtz, and has since been confirmed by Peckholdt, Rideal, Neumeister, Chittenden, Haliburton, Finkler, Helbing and Passmore. The quantitative results obtained from the use of Caroid, as reported in the experiments of Prof. Chittenden, show that in digesting beef proteids and egg albumen in all media, the digestive power of this ferment is from 30 to 100 per cent. greater than any other preparation of Carica employed, and that in the digestion of starch the difference is even greater.

Some idea of the proteolytic action of Caroid upon meat may be gained from the following rough test, which cannot be duplicated with any of the animal ferments.

Place a piece of raw, lean meat, say, $\frac{1}{4}$ lb.—upon a plate. Slice it across with a sharp knife and rub a few grains of Caroid well into it. Let it stand in ordinary living

room temperature—say from 70 to 80 degrees Fahrenheit—for three or four hours. The result will be a general softening and breaking down of the texture of the meat. To appreciate the importance of this result, imperfect as it is, pepsin and pancreatin should be tested under similar conditions. The test is a most severe one, owing to the fact that the ferment comes in contact with the surface of the meat only. A fairer test is made by cooking the meat ($\frac{1}{4}$ lb.), chopping it fine and placing it in a bottle with three or four grains of Caroid, barely covering the meat with warm water, and occasionally stirring the mixture for three or four hours, when it will be found that the meat has been almost completely digested. If the solution be made acid or alkaline the result will be the same.

A proper understanding of Caroid action will be gained when the manifestation of its energy is studied in connection with a fact now generally admitted by scientists, viz: that many, if not all digestive enzymes that effect the decomposition of complex organic material into substances of simple composition fit for assimilation, exist in the vegetable as well as in the animal kingdom, and that the products of their action in either case are the same or nearly the same. Diastase has been extracted from the germinating seeds of a large number of plants; fat-splitting enzymes have been obtained from the castor bean; rennet from milkweed; the proteid digesting enzymes from a number of plants. All these enzymes are found in

the Carica Papaya, from which Caroid is derived. In fact, it is the coming belief that in all plants will be found such digestive agents as are necessary to effect their metabolic processes. Professor Kestle, of the Texas Academy of Science, expresses the idea that enzymes (i. e., unorganized ferments) are the residuum of the vital force of the living cell. It has been demonstrated that they are albuminous and contain phosphorous and probably iron, in addition to carbon, hydrogen, oxygen and nitrogen, and occur in every living animal or vegetable cell.

“Wherever the enzyme is found, either in the vegetable or animal world, observes one prominent author, “its action upon complex chemical substances seems to be the same, and is one of the principal elements of what is called digestion.” It should be remembered, however, that while the *products* of animal and vegetable ferments are practically identical, the *conditions* under which they act are widely different. In other words, there is much evidence to show that digestive ferments conform to their environments, and these, in the animal kingdom, as is well known, vary not only in different portions of the same digestive tract, but also in different animals. Even the proteolytic ferments of animal origin require vastly different environments to insure their action. The pepsin of cold blooded animals acts in a temperature about 100 per cent. lower than does that of warm blooded animals. The pig con-

sumes vast quantities of liquid in proportion to solids, therefore pig pepsin requires an exceedingly large proportion of liquid to enable it to act. In fact, it has been observed, that the digestive enzymes of the pig exert their energies under a considerable number of conditions that are foreign to those prevailing in the alimentary tract of civilized man, who consumes an amount of liquids, which (compared to that consumed by the pig) is exceedingly small, and whose artificial living produces a medley of complex and extraordinary gastric conditions unfriendly to an agent, (like pig pepsin), that, for long ages, has exerted its influence amid different and unvarying surroundings.

It will be seen, therefore, that to produce artificial digestion in man, an agent is wanted that in action is in the largest degree independent of chemical conditions. The vegetable ferment, Caroid, fulfills this indication. Its well-known property of acting under varied conditions, is doubtless owing to the fact that the chemical and physical environment with which it has ever been surrounded in the plant, has been constantly varying, and therefore, compelled such action; the chemical reaction of the juices of the plant being unstable, as the fruit changes from its unripe and acid state to its fully developed and more neutral condition.—[EDITOR.

Patients are comparable to flannel—neither can be quitted without danger.—*Ex.*

INTESTINAL CATARRH.

The American Ferment Company.

GENTLEMEN: In the forty-eight page pamphlet, entitled "Digestion," which you recently sent to me, I find a description of the vegetable ferment, Caroid, and its therapeutic uses. I am afflicted with intestinal indigestion, accompanied with a morning diarrhoea. I eat heartily of food which passes my stomach all right—i. e., there are no eructations of gas; but in the morning, as soon as I get up, gas begins to be freely discharged from my bowels, followed soon afterward by an irresistible desire to have an evacuation. Very little warning is given; sometimes none; so that I often find myself in a foul condition. Judging from the clinical reports given of the action of your vegetable ferment, I am inclined to think that it may relieve me; though everything else that I have tried so far has failed to do so. I therefore inclose you a postal order, for which please send me a bottle of Caroid tablets (plain). I sincerely hope that they will do me good, and, if they do, you may rest assured that I shall prescribe them in similar cases in my practice.

Respectfully yours,

D. RICHARDSON, M. D.,

Jonestown, Miss., Jan. 21, 1901.

NOTE: It will be observed in this case that none of the usual symptoms indicative of gastric disorder are present. On the contrary the evidence is all in favor of some disturbance low in the intestinal tract. It is not surprising, therefore, that the ordinary anti-dyspeptic remedies should have proven ineffectual. As the history of the case is not given, it is, perhaps, impossible to state what may have been the original cause of the trouble, but there would seem to be little doubt, that, whatever it was, it has produced a catarrhal condition of the intestinal mucous membrane which has given rise to the gas formations and morning diarrhoea complained of. Fermentative processes evi-

dently exist, and are probably caused by excessive mucous secretions poured forth from an inflamed or ulcerated surface at some point (usually in the colon). That the lesion is below the stomach is evidenced from the nature of the symptoms, their location, and from the fact that the food ingested causes no immediate distress, several hours elapsing before any complaint is made; i. e., occurring at the time when an evacuation would naturally be made—either upon arising in the morning or after meals.

Abundant clinical experience has shown that chronic diarrhœa of the kind above described is one of the most characteristic and important symptoms of intestinal catarrh, the loose stools consisting chiefly of mucus, transuded blood serum, altered bile, pancreatic and intestinal juices and desquamated epithelia. Mechanical irritation is caused by the presence of the chyme which results in more or less pain in the lower bowel, while the excessive formation of gas is an evidence that fermentation and decomposition is taking place. The accumulation of viscid mucus along the intestinal lining, prevents, also, the proper absorption of liquid food, and much nutriment is thereby lost to the system and evacuated with the stools. It is evident, therefore, that a remedy to be effectual in this condition must possess a marked solvent energy—i. e., dissolve extraneous mucous formations as well as ordinary food-stuffs—and act without regard to media throughout the entire alimentary tract.

The prompt and satisfactory action of the ferment, Caroid, as a general digestant or solvent for all dead organized tissue, renders it an agent of the greatest therapeutic value in the cases we are considering. Its power to dissolve hardened and tenacious secretions in the naso-pharynx, and also the false membrane in diphtheria being well known, many physicians were led to employ it for a similar purpose in cases of intestinal catarrh, where its action in cleansing the membrane of inflammatory products and dissolving abnormal secretions has resulted in the relief of symptoms due to fermentative processes (especially flatulence and diarrhœa), as well as aiding materially the work of digestion. One important advantage, here, in the employment of this ferment, is the fact that it may be given in combination with antiseptics and other agents, without affecting its energy either as a digestant or solvent. We have, therefore, recommended to Dr. Richardson that he use the "Caroid and Charcoal" tablets, prepared according to the following formula:

℞ Caroid, gr. j.
Charcoal,
Acidi borici, aa gr. iss.
Sacch. lact.,
Pulv. aromat., aa q. s.

Two tablets to be taken immediately after meals, three times a day.—[EDITOR.

The physician who absents himself runs the same risk as the lover who leaves his mistress; he is pretty sure to find himself supplanted.—*Ex.*

ALCOHOLIC INDIGESTION.

The American Ferment Company.

GENTLEMEN: It affords me much pleasure to acquaint you of the excellent results obtained from the use of Caroid in a case of a notorious whiskey drinker. This patient drank whiskey to such an extent that the gastric mucous membrane had become so irritable and inflamed, that practically nothing could be retained in the stomach—everything eaten or drunk being almost immediately vomited. Several physicians were consulted in the case, but no relief had been obtained. The feet were badly swollen; the urine was acid and scant; and other signs indicative of renal disturbance, made the case look serious. As the wife of the patient chanced to come under my professional care, he asked me one day if anything could be done to stop his vomiting, he had not been able to retain any food in months. Having noted in the literature which you had sent me that Caroid had been used with success in these cases, I at once prescribed some of these tablets—one to be taken with each meal. The effect of the remedy was immediate. The patient stated that when he took a tablet he could retain his vitals—a luxury he had not before enjoyed for some time. By their use he soon became enabled to eat naturally; so I am convinced that this is a case in which a positive result was obtained from the specific action of the ferment, as no other agent was employed. My experience in the use of ferments dates back some forty-five years, so that I believe I know whereof I speak, in saying that "Caroid and Charcoal" tablets is a "stomach remedy" *par excellence*.

Yours very truly,

O. C. ALEXANDER, M. D.,
Albany, N. Y., Oct., 1900.

NOTE: While digestive ferments in solution are not as a rule injured by a small percentage of alcohol, they are, whether of animal or of vegetable origin, absolutely destroyed by an excess of this stimulant. It is for this reason that excessive and prolonged indulgence in alcoholic beverages results finally in not only a de-

range of the conditions favorable to natural digestion, but in the destruction of the natural digestive agents themselves. The food, being left in the stomach undigested, is either vomited or remains to ferment and cause distress. Insufficient nourishment is taken and malnutrition results. In treating such cases, the amount of alcohol taken by the patient should be greatly reduced or stopped altogether, and artificial digestion resorted to in order to take care of the food for a time, and allow the glandular organs a chance to recuperate during a course of general tonic treatment.

The rationale of Caroid action in these cases is best understood by reference to the conditions prevailing and the nature of the drug. Its advantage over other ferments is not only because of its remarkable digestive power, i. e., acting upon all classes of food in any media—but because of its tonic and sedative action on the alimentary mucous membrane, dissolving retained secretions and cleansing the stomach walls. In other words, it is not only an artificial digestive, unrestricted in its mode of action, but is a true remedial agent in itself. In the case reported by Dr. Alexander, we have no doubt that the striking result so speedily obtained was due as much, perhaps, to the solvent energy of the drug, in removing inflammatory products and preventing fermentation, as it was to its more specific virtue as a digestive, although its importance in the latter respect can hardly be overestimated, since it was through

its enzymotic action that the food ingested was rendered fit for absorption and retained in the stomach at all. Judging from the doctor's letter, one tablet with each meal seems to have been effective, but in the majority of cases better results will be obtained by prescribing two. It is usually advisable, too, in the treatment of this condition, to prescribe in combination with the ferment, remedies directed toward constitutional conditions.—[EDITOR.]

CAROIDIZED MILK.

The American Ferment Company.

GENTLEMEN: I am using Caroid Tablets with much success, and am pleased with the powder recently sent me. I do not see in the advertisements of Caroid products, any preparation for curdling or peptonizing milk. If such a preparation is put up, please give me information regarding it.

Very truly yours,

J. J. BLAND, M. D.,

New Orleans, La., July 5, 1901.

1043 Carondelet St.

ANSWER: No special preparation for the peptonizing of milk is made by the manufacturers of Caroid, but either Caroid Powder or the Essence of Caroid may be used for such purpose. It should be borne in mind, however, that Caroid has the most rapid action upon milk casein of any of the proteolytic ferments, hence milk peptonized with it should be immediately used, or placed on ice to prevent its becoming bitter,—which is the invariable result of rapid peptonization.

Junket made with rennet is rendered digestible by being sprin-

kled with Caroid Powder, or by taking the Caroid immediately after eating the junket.

Caroidized milk, invaluable in infant- and typhoid-feeding, is made as follows: To a quart of pure, fresh milk, heated until lukewarm, add 6 grains of powdered Caroid (previously dissolved in a teaspoonful of water), or two teaspoonfuls of the Essence of Caroid. If the milk is intended for infant-feeding, proceed as follows: After the curd has set (which happens within two or three minutes) beat it up with a spoon or beater until it is almost re-liquefied. Then feed immediately through an ordinary nipple.

The advantages of milk, so treated, are: 1st. Tough, indigestible curds are avoided; and milk cannot be re-curdled after such treatment. 2d. The conversion of the curd into assimilable products is rapidly accomplished within the stomach.

In cases of excessive acidity, lime water may be added to the milk, in the proportion of 1 to 4. An efficient substitute for lime water is the "liquor calcis saccharatus" of the British Pharmacopœia, which is made as follows: Take of slaked lime, one ounce; refined sugar in powder, two ounces; distilled water, one pint. Mix the lime and sugar by trituration in a mortar; transfer the mixture to a bottle containing the water, and, having closed this with a cork, shake it occasionally for a few hours. Finally, separate the clear solution with a siphon and keep it in a stoppered bottle. From 5 to 15 drops of this solution may be

added to each half pint of the milk mixture.—[EDITOR.

ESSENCE OF CAROID IN INFANT- FEEDING.

The American Ferment Company.

GENTLEMEN: In reply to your letter of the 2d inst., allow me to state that the Essence of Caroid has proven itself the only remedy that I could find that would relieve the colic and indigestion in the case of which you speak. The infant was fed from a healthy breast of milk; was colicky from birth. Twenty drops of the Essence after each feeding has about cured the case. The child is now three months old and comparatively well, although still taking the remedy.

I have also used the powder for adults with equally good results. I would suggest that you give the medical profession more definite clinical reports regarding this remedy.

Very truly yours,

J. H. HEALY, M. D.,
San Francisco, Cal., July 26, 1901.

NOTE: The above letter was received from Dr. Healey in answer to our inquiry as to the results he had obtained in prescribing Caroid in a particular case of infant-feeding (where the child "was colicky from birth"),—concerning which he had previously asked our advice. The preparation used in this case, the "Essence," is a permanent solution of the Caroid ferment, and is a *valuable vehicle* to be used whenever a digestive agent is wanted in combination with other drugs. Its palatability renders it an exceedingly desirable remedy to administer to children, and many physicians have used it in this form, in preference to the powder, as an adjunct in infant-feeding, in all cases where the action of the ferment was required to correct di-

gestive disturbances. The "Essence" is put up in one-half and one pint bottles, and may be kept for any considerable length of time in a cool place.

The beneficial results obtained from the use of Caroid, in the case above reported, was doubtless owing to its well-known solvent action upon the proteids (milk casein); which in this instance remained undigested in the child's stomach, and evidently caused the colic. Pediatricists are now generally agreed that persistent infantile colic is the result of failure to digest the proteids. So eminent an authority as Holt (Cf. *N. Y. Med. Jour.*, Jan. 12, 1901) has this to say on the subject: "Habitual colic is nearly always from an excess of proteids. For such a condition one should not give more than one-third as much proteids as fat, and usually at first very low percentages. This condition is usually associated with the presence of curds in the stools, which requires the same treatment."

But in Dr. Healy's case the patient was breast-fed, and, of course, the percentage of proteids could not be reduced. It is evident, therefore, that it is not altogether the *excess* of proteids in the milk which is so productive of disturbances of this character, but rather the presence of *undigested* proteids in the *stomach*. In other words, the infant is unable to digest even a normal proportion of proteids. While we may be enabled, in the bottle-fed infant, to so modify the milk as to procure low percentages of any given ingredient and thus tide over the

difficulty, in the nursing child we must resort to other measures. It is evidently our duty in these cases to *aid the stomach* in its feeble endeavor to render the proteids absorbable. This is exactly what Caroid does; and, we believe, that, in the majority of instances, if the bottle-fed infant were treated in the same way, more satisfactory results would be obtained than is now gotten by reducing the percentages of ingredients of cow's milk below the standard of breast milk.—[EDITOR.]

—:o:—

CRITICAL REVIEWS.

VINO-KOLAFRA AND THE KOLA NUT.

Various letters and scientific papers have been written from time to time, extolling the remarkable tonic properties of the African kolafra, or kola nut, but they have usually appeared either in the form of foreign official documents or in publications which have been in the main inaccessible, so that the majority of American physicians still remain in comparative ignorance of the great medicinal value of this important agent. After considerable pains we have succeeded in securing the following statements from witnesses high in authority, and submit their testimony here for critical review.

The following is a copy of a dispatch from the British Consul at Bahia to the Marquis of Salisbury, at the Foreign Office, London:

"My Lord:—I have the honor to bring under your lordship's notice, in the event that it may prove useful to Her Majesty's

War Office, the great powers of endurance and strength in lifting heavy loads and transporting them to long distances in this tropical climate, possessed by the West African negroes in these parts, which personal observation and conversation with them and West African traders who visit this port enables me to attribute to the free use of the sterculia bean (kola nut), which I learn is now being introduced into the French Army after research, study and experiments made at Marseilles by Dr. Heckle, professor of science at the Med. Academy there. The West Indian carriers at this port, who use sterculia and ~~praithe~~ bean wrapped in banana about ~~by~~ are ~~engare~~, as a whole, not, ~~physical variations~~, superior men to the Brazilian negro, and yet the African, through constantly masticating sterculia can endure labor and fatigue which the Brazilian carriers cannot withstand."

We quote here also an extract from the reports on Botany and Geology, by G. F. Scott Elliott, Esq., Sierra Leone:

"*Sterculia acuminata* [kola tree] is a tree grown nearly everywhere in this vicinity. The following are some of its properties: The nut will enable one to go without food and support great fatigue for twenty-four hours or more. It is an excellent nerve tonic. It is said to immediately remove the unsteadiness and stupidity of drinking."

Mr. W. Fawcett, director of the Botanical Gardens, Kingston, Jamaica, says:

"The nut is used by all the natives, both as a beverage and tonic stimulant. No record will compare with that of the sterculia."

Dr. Gustav Nachtingall, in his work "The Sahara and Soudan," has this to say:

"The sterculia nut, variously prepared, has almost entirely superseded coffee and tea in the Soudan country, although the cost of the former is higher than that of the latter. I soon accustomed myself to this remarkable luxury, and never observed any evil effect from it on the digestion or nervous system."

Mr. Fred B. Kilmer, an American chemist, who spent some time

among the people of the West Indies, where the *sterculia* has been transplanted, says:

"In the Antilles the most common use of the nut is by chewing. The dried nut is not used. The juice is swallowed and the rest ejected. They use the nut or fruit as taken from the pod, wash and wrap it in a leaf or place it in a box or pouch to exclude the air, retain the moisture and prevent change. The burden-bearers and field laborers, both male and female, follow this practice and tell marvellous stories of the power you speak of. They say it enables them to do the most exhausting work under a blazing sun without fatigue, and with little food to drink. A bit of salt fish, a piece of roasted yam or cassava, and a few of these nuts constitute a day's rations. On this they toil tirelessly in the broiling sun, cutting cane, making roads, mowing, and carrying heavy loads, apparently no more exhausted at night than when the day dawns; and they keep this up year after year. Those who chew or otherwise partake of this wonderful fruit seem to lead charmed lives. They seldom break down from overwork, and decrepit men or women are not seen among them. In the weakness and debility which follow fevers and long illness, the nut is prescribed as a nourishment, being chewed freely or made into a drink with milk, honey or the juices of fruit. Beverages also, similar to tea, coffee or chocolate, are prepared from it and used as preferable to tea, coffee or alcoholic stimulants."

The two points to which we desire to direct especial attention in the above reports are: 1st. That the long continued use of the drug produces no ill effects. 2d. That the fresh, green fruit is used by the natives. Concerning the publication of the statement, that kola is a "habit-forming" drug, which appeared not long since in a New York sensational paper, it may be well to refer to the opinion of Prof. A. B. Prescott, of the University of Michigan, who has spent more than two years in the investigation

of kola, and has devoted more scientific study to this drug than perhaps any other man in this country. He has this to say relative to the kola habit (Cf. Pharmacologist, Vol. 1, No. 2):

"The statement is occasionally met with that the continued employment of kola, or its preparations, as a medicinal agent or light stimulant, results in the contraction of a 'habit.' This habit has been described as being either more or less dangerous than the morphine habit—depending considerably on the fertility of the writer's imagination—and its effects on the body and soul have been depicted in a manner well worthy of De Quincey. My own experience refutes these statements so completely that I feel constrained to relate it. After all, in my own opinion, the kola habit is a myth—the creature of the disordered imagination of some would-be sensational newspaper reporter, and has no other existence."

Kilmer adds the following testimony to that of Prof. Prescott:

"After a prolonged sojourn in Jamaica, West Indies, where the kola and cocoa grow side by side, I am prepared to say that a large proportion of the population, white and black, men, women and children, have used kola in some form, time out of mind; indeed, ever since the African slave traders brought and planted it there, and if there is a case in which kola has worked harm to any of these people, I have never heard of it or seen a record of it. On the other hand, the victims of coca and cocaine are as numerous in Jamaica as elsewhere. A chance to compare the different effects of kola and coca is afforded by the habits of the dock laborers in Jamaica, the majority of whom chew the green kola nut while at work. A lesser number chew coca leaves. All large employers of labor in Jamaica testify that kola-chewing is harmless, while coca-chewing is followed in time by all the well-known evils of the coca habit. West Indian physicians, many of whom are of European and American training, are personally free consumers of kola as a beverage, often to the exclusion of tea, coffee or rum, and they advise their patients to do likewise. It is also quite largely used as a medicinal agent."

In a paper read before the Section of Materia Medica and Therapeutics at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899, Charles C. Yarbrough, M. D., of Detroit, Mich., says:

"That kola is not a habit-forming drug is a point in its favor of inestimable value. In substantiation of this assertion, I will state that although I have made extensive inquiries of physicians located in different parts of the country, many of whom use kola extensively in their practice, I have yet to hear of a 'kola fiend.'" (Cf. *Virginia Semi-Monthly*, Oct. 27, 1899.)

Travelers in countries where kola is constantly used by the natives give remarkable accounts of its properties as an aid in accomplishing hard and painful tasks. Careful experiments by scientific observers have amply corroborated these reports. It has been found that under severe strain and prolonged physical labor, athletic exercise, mountain ascensions, hard marching of troops, prolonged bicycle racing, even with very great and continued exertion, the muscular power is not depressed, but that the user can undergo severe and sustained effort without feeling the fatigue that would naturally follow upon such effort.

But the question may well be asked, why do not the preparations found in the American market produce the same medicinal effect, as that which is obtained by the native in chewing the nut itself? Investigations have shown that the West Indian and African are always careful to procure the fruit and chew it while it is yet *fresh and green*. As the majority

of our medicinal preparations have been made from the *dry nut*, it is evident that their inertness is due to the loss of the juices of the fruit which contain the active principles.

Having recognized the importance of obtaining the fresh nut, the manufacturers of *Vino-kola* have established their base of operations in the habitat of the kola itself. At their plantation in the West Indies, they are enabled to make their preparation from fresh kola, undried, unchanged and gathered by persons trained in pharmacy and materia medica. They thus prevent all changes in its nature and properties by drying and handling, the ravages of plant disease, mould and insects to which the ordinary drug is invariably subjected. They are enabled to exhaust the fresh and unaltered drugs by solvents that extract and retain all such of their active constituents as are of service in medicine.

Vino-kola, or wine of kola, is prepared from white, undried West India kola nuts, extracted by an original process, at the spot on which they grow. It retains all of the constituent elements of fresh kola nuts, including the glucocidal caffeic principle (kolanine) upon which the peculiar virtue of the drug depends, but which is lacking in all preparations of the dried nut. It is essentially the only vinous preparation of kola that in any way represents the drug. Taken in doses of one-half or one wineglassful at meal times, it is a true restorative tonic in the most effective and agreeable form that can be devised; and its stimulative

action upon the muscular system is due to the same active principle which has rendered the use of the nut in its fresh state so famous.

—:o:—

SELECTED ARTICLES.

CAROID IN MALDIGESTION OF INFANTS.

BY ARTHUR W. CONDUCT, M. D.,
DOVER, N. J.

(Reprinted from *Philadelphia Medical Bulletin*, April, 1901.)

A very considerable part of every busy family physician's practice consists of work in aiding the reformation of infants' perverse digestion. We have all run the gamut of prepared milk foods, sterilized and condensed, predigested and lactated, in quest of something that would agree with this or that baby, particularly with this or that bottle-fed baby. We have all found that the infantile digestive apparatus is an exceedingly delicate mechanism, requiring finest adjustments, and that, usually, each individual case offers a different problem to solve.

We have all learned, too, that an infant is not nourished by what it swallows, but only by that portion of its food which is digested and assimilated. A proper dietary, therefore, is one that is adapted to the infant's age, constitution, and digestive powers; so that, as far as possible, everything swallowed may be digested and absorbed. As one writer states: "Children differ as much in constitution as in feature, and it is impossible exactly to formulate a

food that will be applicable to every case. As age and strength increase, there is a corresponding development of the gastro-intestinal functions, and a call for more and stronger food. On the other hand, should the system be reduced by disease, the digestion sympathizes in the general debility, loses somewhat of its power, and assumes that of an earlier age. In such cases the impaired strength must be sustained and increased by giving only such food as can be completely assimilated, and not by forcing down strong food merely because it is *strong*; for the latter, when not vomited, passes through the bowels undigested, and the little creature starves to death in the midst of plenty, or dies from the ill effects of the constant presence of fermenting food in the alimentary canal."

It is for the relief of the abnormal condition just described, i. e., the presence of undigested and fermenting food, that we as physicians are most frequently called upon to prescribe, and in this day of high pressure living, and bottle-fed infants, such cases are constantly before us. Hitherto, it has been a questionable practice in these cases to furnish one of the innumerable predigested foods; but it has been the experience of the writer that in the feeding of infants, food which is not entirely predigested, and which therefore stimulates the functional activity of the organs which furnish the digestive ferments, is preferable, as a rule, to food which is entirely predigested, and which therefore requires only absorption,

provided that the digestive organs are not over-taxed, and the digestion is easy and complete. This statement is based on the fact that the healthy development of the infant requires the normal functional activity of all its organs, of those of the digestive system as well as of the other systems. There are certain natural functions that should be allowed to act as they do on human milk, and it seems irrational and contrary to the laws of physiology not to encourage all functions to act naturally, each in its own province, instead of forestalling their action and allowing them to fall into disuse and thus become weakened. The allowing a developed function to fall into disuse might be said to occur in predigesting albuminoids; i. e., in digesting them outside of the body instead of inside.

Furthermore, it is a well established fact that the digestive juices have important *preservative* action. The chyme is a mass admirably adapted for putrefaction or fermentation, and such a mixture outside of the body, at the same temperature, would quickly decompose. Such decomposition, however, occurs, in the alimentary tract of the infant, only through some previous excesses, or errors in diet, which have resulted in a deficiency of the digestive secretions and therefore a proportionable loss of their antiseptic function. The problem, then, is not to supply food which has been artificially digested outside of the body, but to follow nature's method and digest it inside of the body, aiding and encouraging the organs

themselves to a natural performance of their duty.

To attain this object, all have felt the want of a digestive ferment that would act independently of its environment; one that would perform temporarily the part of the normal secretions in the various portions of the alimentary canal, not only aiding in the digestion of all classes of food, but acting enzymotically in checking fermentation and the development of the microbes causing enteric diseases. Pepsin, diastase, pancreatin, etc., though unorganized ferments of the nature required, have all been tried and found wanting in some essential quality, one being restricted in action to an acid medium, another to an alkaline; one digesting starches only, another only proteids. What has been needed, therefore, is a ferment possessing both amylolytic and proteolytic properties, and whose digestive action is not inhibited by its surroundings; in other words, an unconditioned ferment.

While the writer does not profess to know of an infallible agent of this character, yet he believes that the vegetable digestive ferment, Caroid, obtained from the juices of the plant *Carica Papaya*, will be found to answer the requirements of the case more nearly than any other unorganized ferment or enzyme yet discovered. Its general action upon proteids and starch, in acid, alkaline or neutral media; its striking action upon milk casein, which it dissolves completely and converts into assimilable products in two or three

hours, gives it unusually wide scope, and a little experience marks it as something entirely new in the line of digestives, something more positive and certain than our previous experience with artificial digestives had warranted us to expect.

In its action upon milk the enzymotic power of Caroid is exhibited in a very striking manner. Ordinarily, as is well known, the casein of cow's milk produces large and firm masses in the stomach; masses that the normal digestive ferments penetrate with such difficulty that they frequently cause indigestion in the infant, and appear in the stools in coagula of greater or less size. Acted upon by this ferment, however, cow's milk closely resembles human milk in appearance, its casein being so digested that it either is not at all precipitated by acids, or is precipitated, like that of human milk, in fine feathery flakes. When the process is continued, these flakes are subsequently disintegrated into the form of the soluble syntonnine, and finally transformed into a true peptone, capable of diffusing itself through animal membrane.

Like any other efficient remedial agent, Caroid must be used intelligently and with discretion in order to obtain best results. There are, of course, some cases of infantile indigestion, in which, owing to the excessively acid condition of the stomach, the milk is curdled and expelled so quickly that the ferment is given no chance to act upon it. In such cases it has been my custom to combine

lime water or some other alkali with the milk, and prescribe the ferment in solution (one grain dissolved in sweetened water) immediately after feeding, or better still, one-half teaspoonful of the essence of Caroid. The latter is a permanent and palatable solution of the ferment recently prepared by the American Ferment Co. (the manufacturers of Caroid), which I have found especially serviceable, and which, when properly indicated and applied, has not failed to relieve any cases of mal-digestion, howsoever severe or various the symptoms may have been. Another point in favor of the essence in these cases, is the trouble saved in preparing the Caroid powder itself for the babies, nurses being proverbially careless and inefficient in attending to such duties.

The following typical case of the more severe form of infantile maldigestion, is cited here as an illustration of the superior value of Caroid as a digestive agent in pediatric practice:

Howard Guest, æt. 16 months, suffered from an acute attack of intestinal indigestion brought on by a too free indulgence in "mashed potato" at dinner. Classical symptoms of entero-colitis supervened; tympanites, excessive; profuse, frequent, fecal discharges of undigested milk curds, large and small, mixed with muco-purulent material,—greenish, fetid and acid. The fever, which ranged as high as 105°, at the onset, was controlled nicely by the abdominal ice-pack. Meningeal symptoms were also controlled by applying

ice-cap to the cerebellum. The heart's action was sustained by strychnia and glonoin. Local treatment consisted in coating the intestinal tract with bismuth subgallate; thoroughly disinfecting and deodorizing discharges; daily use of intestinal irrigation with saline solutions per rectum, and ol. ricini, 3 ij, per orem; while hydrargyrum bichlorid., $\frac{1}{10}$ grain was administered every two hours.

The food, at the onset, consisted of Mellin's food with milk. The treatment was continued throughout three months, during which time various foods were in turn made use of but had to be discarded; to wit, Mellin's, imperial granam, peptogenic milk powder, malted milk, Allenbury's food and Eskay's food. The various modifications of sterilized and Pasteurized milk were also used at first, but each, in turn, had to be discontinued. We were finally forced to discard all milk foods, and then resorted to the use of expressed juice of slightly charred beefsteak, giving as high as twenty-four ounces of juice daily. The child's strength continued recuperating nicely with the meat juice, for three weeks, but after that time it did not seem to satisfy him. An attempt was then made to use a modified milk, but immediately curds and mucus appeared in the fæces, with concomitant symptoms, and the effort had to be abandoned.

Finally, Eskay's food (the well-known albuminized milk food), was again resorted to. But this time we added to each feeding (ten minutes prior to its adminis-

tration), one grain of Caroid powder; our object being not to entirely predigest the food (before giving), but simply to initiate the process and better enable the ferment to act locally on the gastric and intestinal linings in dissolving extraneous mucous formations. The child took the food greedily; and, though after several feedings a careful examination was made, the fæcal discharges failed to reveal any evidences of curds or even of acidity. The subsequent progress of the case was entirely satisfactory, no untoward symptoms arising at any time to interfere with a rapid convalescence and speedy return to health. Without the peptogenic and antiseptic action of the Caroid in this case, and its stimulating effect upon the normal digestive secretions, I am satisfied that the child could not have been fed upon milk foods; and that, as a result, scurvy would doubtless sooner or later have manifested itself.

THE TREATMENT OF ASTHMA.

A Clinical Lecture Delivered at the Hospital College of Medicine, Louisville, Ky.

BY THOMAS HUNT STUCKY, A. M., M. D.,

Professor of the Theory and Practice of Medicine in the Hospital College of Medicine, etc. Louisville, Ky.

(Reprinted from *New York Medical Times*, September, 1900.)

This patient, Mrs. H., aged fifty-eight years; comes to us for treatment because of asthma, from which she claims to have suffered for several years. The diagnosis of this condition in the majority of instances is comparatively easily made. There is a characteristic

breathing, lifting of the shoulders, sinking in of the chest during inspiration, opening of the mouth, wheezing, etc.; we also have in many instances a flattened chest associated with asthma.

The question as to the causation of this condition is one of great interest. We recognize the fact that stenosis anywhere within the respiratory tract will produce asthmatic breathing. We recognize also the fact that cardiac lesions, where there is an interference with the return circulation, in other words, a damming up of the blood, will produce a condition akin to asthma. We also know that it not infrequently comes on secondarily from disturbances of metabolism thought to be gouty in origin. In a chest of this kind where there are so many sounds, it is sometimes absolutely impossible to determine whether there is a cardiac lesion or not. We recognize the fact that we may have sonorous and sibilant sounds throughout the lung, and we also have a peculiar characteristic cough spasmodic in character.

Examining this patient's mouth I find there is absence of many teeth, hence the first element of the process of digestion is interfered with, viz.: there is imperfect insalivation, imperfect mastication, therefore there is an increased amount of work thrown upon the stomach, which it is unable to perform. This can be demonstrated from the fact that without teeth there cannot be mastication, without mastication there cannot be insalivation, and without insalivation there cannot

be perfect digestion, especially of the starchy foods.

I believe in this case the dietetic influences are very important. There is an absolute necessity of keeping the patient on a diet that can be handled, a necessity for paying strict attention to assimilation. It is important to instruct the patient as to the necessity of perfect digestion in so far as it can be carried out. If we accept the theory of gouty diathesis as the cause of conditions of this kind, as laid down by Haig, the uric acid theory, other remedies would be indicated. Considerable stress is being laid upon the importance of giving alkalies at the present time, in full doses—a teaspoonful to a dessertspoonful in a glass of water every three hours.

Another important point is that in all these cases water is a great factor, that is flushing the genito-urinary tract, eliminating the offending substances, uric acid, lactic acid, or whatever they may be; the carrying away both by the alimentary tract and by diuresis of all toxic principles, at the same time raising arterial tension, quiet the nervous system, and paying particular attention to bringing the digestive symptom up to par.

I am more and more convinced every day that a large percentage of these cases are curable; I am impressed with the fact that the vast majority of them are dependent upon disturbances of metabolism or intestinal disturbances; that the vast majority of patients who are asthmatic are made so mechanically, due to fermentative

changes taking place within the intestine, and the distention of the transverse colon and pressure resulting therefrom. I have relieved acute asthma in five minutes by the colon douche, by large doses of purgatives, by nitroglycerine, by raising the arterial tension, by using the pearls of nitrite of amyl.

So you see that the drugs which are of service in the treatment of this condition are indeed numerous, but the principle laid down of elimination and sedation is the true principle in the management of all these cases.

There is a peculiarity in asthma which is generally striking, that is the shoulders are raised nearly always. It is simply to produce chest expansion; it is to relieve the pressure and get air. Another thing to which I desire to call your attention in connection with these cases is that even with the thermometer at zero they insist upon having the windows open to enable them to get more air, they are suffering for want of air, respiration is seriously interfered with, and in the coldest weather respiratory efforts will often cause the perspiration to stand out upon them. Do not hesitate to leave the windows open under such circumstances, let them have all the air they can get, I have never known such a patient to take cold, and they cannot get enough oxygen in a warm closed room. I have known such patients to sit in an open window in extremely cold weather for hours without any bad effects.

This patient is fifty-eight years of age; she had the change of life ten years ago, since which time she has had asthma; there is a distinctly neurotic history. Nature has stopped drainage through the menstrual function, and being unable to compensate for this the system has become loaded with uric acid, seriously affecting the nervous mechanism of the economy. She says her bowels have always been fairly regular; that she suffered with headaches years ago, principally located in the back of her head; kidneys always acted freely, she has to get up at night to empty her bladder; pain in the stomach running back to the shoulders; rheumatic pains throughout the body, legs and knees; there has been at times some nausea, but no vomiting; sour belching three or four hours after eating, especially any kind of meats eaten causes her to suffer more from shortness of breath, etc.; never had diarrhœa; bowels act three or four times every day; asthma worst in the morning, and especially so during bad weather.

To sum up the history obtainable in this case, without making any examination, we find that her trouble dates from cessation of menstruation, or that period of life known as the menopause. We recognize at that time that there is great change taking place in the nervous system, while the woman is preparing herself, so to speak, for the exit from, just as we might say of her entree into, her child-bearing period. The same changes exactly take place. There

is a destruction of function with necessarily a compensation on the part of other organs to carry off that which should have been eliminated by the ovarian and uterine channels. Now, the question at once comes up, what becomes of this waste material? Is it taken up by the circulation and eliminated by the alimentary tract, skin and the kidneys, or is there a complete cessation and simply an accommodation to the loss? It strikes me that this accommodation must take place through the systems named, because you will find after you have been in practice for some time, cases of this kind consulting you with a history similar to that given by this patient. You will notice that there is a rheumatic tendency and a gouty history without the history of any acute inflammatory trouble whatever, and the fact of changes in the nervous system, the fact of the history of wandering pains, of three or four alvine evacuations a day, loss of teeth, imperfect mastication and gastric disturbances following ingestion of certain articles of diet, it would lead you to believe that in cases of asthmatic breathing the trouble was entirely dependent upon uric acid or the gouty diathesis; and your treatment will be conducted accordingly.

In this case we will assume that the trouble is due to imperfect digestion entirely, and our treatment will be instituted with this idea; in other words, we will endeavor to complete that which has been incompletely performed, and see if this does not bring about a

cure of the asthma. Remember that you can often relieve asthma by thorough elimination by the intestinal tract; and the same thing can sometimes be accomplished through the kidneys by active diuresis.

I suggest that we give this woman the following: Caroid, a vegetable digestant acting in any medium, non-toxic in its action; hydrastea, alkaloid of the golden seal, intestinal antiseptic and bitter principle, therefore a stomachic tonic having the power to stimulate peristaltic movements; podophyllum resin, stimulating the hepatic secretions even more than they are apparently stimulated by irritation; extract of hyoscyamus, a stimulator of peristalsis, mydriatic, stimulating the capillary circulation, therefore a heart stimulant and seeming to have a sedative influence upon the lower part of the intestinal tract and lessening thereby any tenesmus which the podophyllum may produce. We will make twenty capsules for Mrs. H., one to be taken after each meal, of the following:

- R Caroid, gr. xl.
- Hydrastea, gr. iv.
- Podophyllum resin, gr. j.
- Ext. hyoscyamus, gr. x.
- M. ft. capsules No. xx. Sig. One after each meal.

It is barely possible that the hyoscyamus may produce a little dilation of the pupils owing to its mydriatic power, and it may be necessary to reduce the quantity; as a rule, though, in women over forty-five years of age they seem to bear rather full doses of this agent.

We will instruct the patient to report to us one week from to-day that we may see what the result of this treatment has been. We shall hope by the combination given to produce a decided amelioration, if not a complete cure, of all the symptoms of which she complains.

—:o:—

ITEMS AND NOTES.

Causes of Infant Mortality in Summer.—The weeds eaten by the cows in their summer pastures are responsible for many cases of gastro-intestinal disease. Many of these weeds are poisonous and their juices pass into the milk. In support of this theory, Hauser gives the statistics of mortality in a number of districts in his experience, classifying them by the soil and the weeds that grow by preference on certain soils. His tables indicate a lower death rate on the granite and sandstone foundation than on the jurassic. He contends that systematic eradication of weeds from pastures would banish certain gastro-intestinal affections in infants.—*Kinderarzt* (Leip-sic), July, 1901.

Pure Milk.—There are many terms used to express the different varieties of milk sold to a community. We have what is known as "good milk," "blue milk" and "blue water." There is no food that requires closer inspection than that of milk. New York authorities have recently prosecuted several milk supply houses for selling

impure milk. This should serve a good purpose in calling the attention of other cities to the great importance of getting good milk. The rich do not suffer because they can pay a fancy price and get "milk," but it is the poor who suffer. During the heated term every quart of milk sold should undergo official inspection.—*The Charlotte Med. Jour.*, July, 1901.

Laboratory Feeding and Sterilization.

1. Laboratory modifications do not, in the experience of the writer, agree with infants as often as home modifications.

2. Laboratory modifications are necessarily subjected to more handling and transportation than home modifications.

3. Milk that is fresh, clean, and from cows free from tuberculosis is preferable uncooked, or in other words, pasteurization and sterilization are to be avoided, if possible.

4. The addition of cereals, in the form of barley or oatmeal water, is generally advisable after the seventh month.—*Boston Med. and Surg. Jour.*, July, 1901.

Vegetarian Diet.—Albu says that the older belief that an exclusively vegetarian diet is insufficient, owing to its poverty in albumin, is no longer tenable. He gives the results of three investigations, of which one is original, proving that vegetable proteids may entirely replace the animal albumins without interfering with metabolism. As a regular régime

for the healthy, however, a purely vegetable diet is too inconvenient owing to the large amounts that must be consumed, the quantity of undigested residue, the monotony, etc., ever to enjoy more than a limited popularity, but in many forms of disease it may advantageously be adopted. Neurasthenia and neuralgia are especially benefited, and many forms of gastric neurosis do well under it, as also membranous colitis and chronic constipation. Obesity, cardiac and kidney disease, exophthalmic goitre and many skin affections are all favorably affected. Contraindications are anatomical disease of the stomach or intestinal tract, gastric atony and all conditions of malnutrition; many persons also exhibit an idiosyncrasy which makes them bear the change badly and in such cases it should not be persisted in.—*Berliner Klinische Wochenschrift*, June 24, 1901.

A New Method of Determining Acidity.

—The amount of contents obtained by the stomach-bucket is always so small that we cannot well filter and titrate it, and Güng-burg's test is somewhat complicated and lengthy. A new method of determining approximately the amount of HCl in the gastric contents is by saturating filter paper with Toepfer's solution of dimethylamidoazobenzol and then touching it with a glass rod dipped in the stomach contents. If the paper turns red, 1 drop of the contents is diluted with 2 drops of water and another test made. The dilution is continued until almost

no red color is produced. A table is given, showing comparison with titration methods. In the majority of cases a dilution of 3 to 6 corresponds to a normal, under 3 to a subnormal acidity and over 6 to hyperacidity.—*Med. News*, July 25, 1901.

A New Food Plant.—The U. S. consul general at Frankfort-on-the-Main, Germany, quotes from some German papers a description of a plant growing in tropical Africa, belonging to the leguminous class, which is largely cultivated by the negroes as a food article. A French chemist, who recently analyzed the fruit or nut, found that it contained 58 per cent. of starch, 19 per cent. of nitrogenous matter, 6 per cent. of hydrocarbon, 4 per cent. of cellulose, 3 per cent. of ash, and 10 per cent. of water. The plant is called by the African natives *woandsu*.—*Med. Rec.*, July 20, 1901.

Oxalic Acid Poisoning From Food.

—Baroux notes that oxalic acid in the form of binoxalate and quadrioxalate of potash is found in certain vegetables such as sorrel, spinach, tomatoes, etc. These salts are in the form of minute crystals in the protoplasm of the vegetable cells, near the nuclei. By many botanists they are considered products of elimination. The writer reports several cases of oxalic poisoning from food.

A young man, 23, ate spinach and also some cherries. He was taken ill with intense pain in the

right epigastrium, and a diarrhœa, with small, frequent, liquid, glairy stools. The citric acid of the cherries had combined with the oxalates in the spinach to produce oxalic acid. The absolute digestive power of the pancreatic juice on a meat diet is greater than on bread and milk.—*Bolnitchnaia Gazeta Botkina*, May 16, 1901.

Two children ate spinach and an orange and were taken with the characteristic symptoms of pain, localized in the right epigastrium, and glairy diarrhœa. Four other exactly similar cases are also reported.—*Gazette des Hospitaux*.

Olive Oil as a Food.—The use of pure olive oil as a food with the meals, should be used by both the mentally depressed and the abnormally excitable. It helps nutrition and gives a gentle aid to elimination. If it cannot be taken with food preparation, a teaspoonful or two can be taken regularly at the close of each meal.—*The Toledo Med. and Surg. Reporter*, July, 1901.

Digestive Power of Pancreatic Juice.—Lintvareff found as a result of experiments performed on dogs with fistulæ that on a meat diet the pancreatic juice contains trypsin without zymogen, and is not rendered more active by the addition of intestinal juice which seems to exert rather an inhibitory influence. The addition of bile to such juice exhilarates its activity. On the other hand when the diet consists of bread and milk only, the reverse takes place; there is more zymogen, and the intestinal juice, and not the bile, stimulates the activity of the fer-

Cereal Gruels in Infant Feeding.—After a reference to the standard text-books and recent articles, the conclusions are reached that chemical analyses of milk are not the only scientific bases of comparison; that nature adapts an animal's milk food to its digestive system, and that cow's milk and woman's milk were intended for different digestive systems; that as cow's milk forms solid curds and woman's milk flocculent curds, the curd of cow's milk intended for an infant should be broken up mechanically; that as cereal gruels mechanically break up the curds of cow's milk and as infants are able to utilize them, their use is rational.—*St. Louis Med. Rev.*, July 20, 1901.

Pure Food Legislation vs. Poor Food Legislation.—Under this title Dr. Murray Galt Motter, of Philadelphia, points out the necessity of pure food laws. Drugs are also included. General legislation is, according to Dr. Wiley, of the United States Agricultural Department, the only just and practicable method of securing the desired results. "An honest label" is the keynote of modern propaganda in respect to methods of control of food adulteration. Though the writer feels himself by no means competent to finally

solve the many problems arising in proper food legislation, he suggests that the subject be more thoroughly entered into by the medical profession and that the physiology of digestion, absorption and assimilation, dietetics and practical therapeutics be more carefully worked out. Such a preparation will insure the adoption by the profession of certain definite and reliable fundamental principles and then the carrying out of these principles by the government may follow. The establishment of a national department of health which should have charge of this and all allied subjects is most earnestly to be desired.—*Jour. A. M. A.*, Apr. 6, 1901.

The Advantages of Cereal Decoctions.—Franklin W. White (*Boston Med. and Surg. Jour.*), after making experiments in test tubes and in animals with gastric fistulæ on the coagulation and digestion of milk diluted with decoctions of cereals, lime water and albumin water, arrives at the following conclusions:

1. Dilution of milk with cereal decoctions of proper strength renders the casein curd much more fine, soft and digestible than simple dilution with water. There is no difference in the action of various cereals, such as barley, oats, rice or wheat.

2. The above property is due mainly, if not wholly, to the starch in solution. The most desirable amount of starch in the milk mixture for practical use is approximately three-fourths of 1 per cent.

3. Diastase, by converting the starch to dextrine and maltose, promptly lessens and removes the action of cereal waters upon casein. Its addition is therefore, not a practicable measure when action upon the curd is desired.

4. Albumin water has no practical value as a diluent of milk.

5. Lime water added to milk has no more effect than water upon the character of the curd produced in the animal stomach.—*The Charlotte Med. Jour.*, June, 1901.

Practical Food Prescribing.—

It is requisite for a good prescriber of food for infants to have a thorough knowledge of breast milk, of chemical and physical composition of artificial foods, of good cow's milk and how secured, of the difference between cow's and breast milk, of modifying for the individual infant, and of the character of food required in health and disease. Artificial foods are deficient in fat, milk, sugar and proteid and are vegetable in origin. Cow's milk, properly modified, is the best food. There is a close relation between acidity and bacteria. An important detail in handling milk is rapid cooling after milking. Milk should be sterilized only in rare instances. Milk should not be modified according to set formulas but according to the requirements of each case, beginning on a weak mixture and working up to a point of tolerance. Tables are given showing the percentage of fat in increasing numbers of top ounces of milk with a general for-

mula for diluting. This relieves the practitioner of the burden of remembering formulas for various ages. A table for milk sugar is also given.—*Medical News*, May 11, 1901.

Hyperacidity and Skin Affections.—W. R. I. Dalton holds that hyperacidity of the contents of the duodenum, due to the hyperacid condition of the stomach, produces derangement of physiologic metabolism, and is the starting-point of nearly all the diseases of the skin, except the contagious exanthemata.—*Pediatrics*, June, 1901

The Addition of Sugar of Milk to Cow's Milk.—J. Prechtel has had occasion to observe several infants fed upon home-sterilized milk whose general condition left something to be desired. These children, without bad hereditary antecedents, were large, but at the same time pale and anæmic, with flabby muscles and slender bones. Their stools were not constipated, contained mucus at times, but were in general normal in appearance. The only noticeable fact of importance was that there were frequent acid eructations with gas, the emission of which gave manifest relief.

The only peculiarity in their feeding consisted in the addition of sugar of milk to increase the sugar percentage to something nearer that of human milk.

The author discontinued the addition of milk sugar and at once the acid eructations and flatulence

ceased and the development of these children became normal.

The rôle of sugar of milk in dyspeptic troubles is explained in the following way: Casein, which in cow's milk differs from that in human milk, is combined in both with phosphate of calcium. According to the researches of Rumpf lactic acid possesses the property of precipitating the salts of calcium, and thus the casein is set free and coagulated. Sugar of milk, which easily undergoes lactic fermentation, has the effect of coagulating the casein of cow's milk and rendering its digestion difficult, thus creating conditions favorable for the development of dyspepsia.—*Jarbuch f. Kinderheilkunde*, 1901, Band iii, S. 216.

Gastric Atony.—Gastric atony is a functional condition in which the expulsive power of the stomach is decreased. There may be distention after meals, but this returns to normal after the stomach is emptied. Predisposing causes are immoderate eating, excesses, overwork, deficient sleep, etc., the trouble being usually associated with neurasthenia. Typhoid and malarial fevers, tuberculosis and gastric catarrh favor its development. Wearing of corsets is also an important factor. Symptoms are those usually attributed to dyspepsia, and the patient, though complaining much, will eat and sleep well and be in good health. The diagnosis is made: (1) By tapping with the finger tips over the stomach, which causes a splashing sound. (2) The size and posi-

tion of the stomach may be obtained by percussion and the length of time it takes to empty itself, judged by the disappearance of the splash and of the zone of dullness along the lower border of the stomach. (3) Leube's method of introducing a tube may be used. (4) Ewald's salol tests consists in giving a gram of salol half an hour after a meal and testing the urine for salicyluric acid every half-hour afterward. The reaction should be obtained within an hour if the motor function is normal. Treatment consists in following rational dietetic rules, exercise, massage and electricity. If an excess of hydrochloric acid is present, stimulation must be avoided and alkalies and belladonna given in large doses at first, and later enough to maintain the effect.—*International Med. Magazine*, Sept., 1901.

Is Alcohol a Food?—R. Romme declares that our knowledge of the physiological action of alcohol and the alcoholic beverages is very limited. In medicine, alcohol passes as an excitant or stimulant—a very vague term. But it really appears from its effects, according to many authors, to be a paralyzant. It alters rather than stimulates the functions of the organism. It presents the action of a toxic substance whose effect is more paralyzing than stimulating. Alcohol is not a food, properly speaking. It should be considered a condiment. But in order to play this rôle, which is one of considerable importance, it should be sufficiently diluted, and natural, as it is

found in a drink naturally fermented, such as wine, cider or beer. In any other form it is a poison.—*La Tribune Medicale*, June, 1901.

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THERAPEUTIC SUGGESTIONS.

THE LOCAL USE OF CAROID IN DIPHTHERIA.

BY W. H. BENTLEY, A. M., M. D., LL.D.,
WOODSTOCK, KY.

I have recently used Caroid locally in seventeen cases of diphtheria, and my experience was so completely satisfactory that I think I should report it.

In all the cases I used constitutional treatment and Caroid in a ten per cent. solution locally. February 17th, I saw three cases in one family—Billy, the eldest, æt. 9; Betty, 7 and Charley, 5 years old. Billy had been ill three days; temperature, 102.5; pulse, 100 and weak; general appearance unpromising; countenance alternately quite anxious and then resigned; the fauces and wall of the upper throat covered by the characteristic fibrinous exudate. Besides internal remedies I used a ten per cent. solution of Caroid with a swab of cotton wool on a flexible probang. I had the cotton freely supplied with the solution, which, when applied, was pressed out and all rubbing avoided. One hour after the operation nearly all adventitious membrane seemed to have been dissociated and dissipated. An hour later I applied the solution again. Three hours after this second application

I applied it again. At this time the entire throat was free from exudate, but the mucous membrane looked soft and unhealthy. After this the solution was used every four to six hours till the mucous membrane assumed a healthy and natural appearance, but at no time after the second treatment did any exudate appear. This case was well, and dismissed on the fourth day.

The cases of Betty and Charley were treated locally twice each, but there was no local manifestation of diphtheria after the first treatment in either case. Both cases were well in two days.

This neighborhood is fifteen miles from my home, and I treated fourteen other cases before my return home, but as the above are samples of my treatment and success in all the seventeen cases, I need not detain the reader with the details of any other cases. There had been diphtheria in a vicinity adjoining this neighborhood on both the East and West, and, in both, there had been many fatal cases, and this is the reason, I suppose, that I was called at so great a distance. I had the good fortune to lose no case and to have none (except that of Billy R., reported), require treatment longer than five days, and I ascribe the rapid recovery in all these cases to the excellent effect produced on the mucous membrane by the Caroid used locally. I have heard that Caroid is more conveniently applied by blowing the powder into the throat with a tube of glass or twisted paper. Inasmuch as, according to Prof. Chittenden, the

action of Caroid is not interfered with by such antiseptics as a 0.2 per cent. salicylic acid solution, or mercuric chloride when present in a neutral solution to the extent of 1-1000, it is obvious that the ordinary washes used in diphtheria could be employed in connection with Caroid. I depended, however, upon Caroid alone for the results reported. When a remedy produces a clean, healthful and vigorous appearance to the mucous membrane by its local use in diphtheria, as Caroid does, its use cannot be too highly emphasized.

—:o:—

It would be hard to find words more expressive of the truth touching the course of one's professional life than the following: "A reputation, to be lasting, must not come accidentally, or by trickery, but be based on talent and merit. Such a reputation is built up little by little,—built to endure, and to give one wealth that cannot be wholly represented by the money he earns. It must be a large part of his working capital. The only way to secure it is by firm and persistent reliance on merit."—*Ex.*

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While there is much truth in the statement that, "Where there is nothing great to be done, a great man is impossible"—when it comes to medicine, to be a modest country doctor, surrounded by confident constituency, is no mean position to occupy, and might well fill the cup of ambition for the best equipped man.—*Ex.*

ESSENCE OF CAROID

An elegant, palatable and permanent solution of the vegetable ferments contained in Caroid, and possessing their well known qualities of acting upon all kinds of foods, in acid, alkaline and neutral media. It is therefore

A VALUABLE VEHICLE

when a digestive agent is wanted in combination with other drugs.

A USEFUL ADJUNCT IN INFANT FEEDING

Owing to its remarkable action in digesting the casein of milk (converting the hard curds into assimilable products) Caroid (Powder or Essence) is one of the best correctives of infantile indigestion thus far discovered.

THE AMERICAN FERMENT CO.,
Jersey City, N. J.

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FERALBOLD

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as found in the Yolk of an Egg**

The advantage of feralboid is that it is a peptonized albuminate of iron which will keep indefinitely, the dose is small and is capable of any number of different combinations with other drugs.

Feralboid is given only in one-third and two-thirds of a grain and to further protect it, is put up in tablets, 150 in a bottle, as follows:

Feralboid plain, each tablet containing one-third of a grain of the drug.

Feralboid and quinine, each tablet containing one-third of a grain of feralboid and one grain of quinine.

Feralboid, quinine and strychnia, each tablet containing one-third of a grain of feralboid, one grain of quinine and one one-hundredth grain of strychnia sulph.

Feralboid and manganese, each tablet containing one-third of a grain of feralboid and one grain of the sulphate of manganese.

One hundred and fifty of either kind of these tablets will be sent, carriage prepaid to any part of the United States, on receipt of one dollar.

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A SURGICAL PROP.

A Perfect Antiseptic Ointment for Surgical Uses.

Prepared only for the Medical Profession.

Hydrargyri bichloridi, Oleum eucalyptus (Australian), Formalin, Benzo-boracic acid.

A glance at this formula will convince the busy practitioner at once that in lyptol we have a most formidable weapon for combating a wide range of surgical conditions. It must be remembered that it is prepared exclusively for the use of the Medical Profession; in fact, if the manufacturers wanted to do so, a glance at the formula will show that it is too powerful to be used without the direction of the physician. It is put up in large glass jars containing one pound.

If you cannot procure it from your druggist, we will, on receipt of one dollar, send one full pound jar, express paid.

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Caroid Laxative Tablets.

A LAXATIVE PAR EXCELLENCE.

℞ Caroid, gr. 1.
Cascara Sagrada, gr. 2.
Podophyllin, gr. $\frac{1}{8}$.
Ext. Belladonna, gr. $\frac{1}{16}$.

CHOCOLATE COATED.

Caroid is a corrective of gastric and intestinal irregularities. It is not only a useful aid in checking diarrhœa, but in relieving constipation. Combined with the laxative principles of Cascara Sagrada, Podophyllin, etc., as in "Caroid Laxative Tablets," it produces most excellent results. The fluidity of the bile is augmented, a more generous outflow ensues, and the peristaltic action of the bowels is consequently increased. Caroid Laxative Tablets have been uniformly pronounced by physicians a most desirable combination, for the relief of chronic constipation, especially in women and those who lead a sedentary life.

THE AMERICAN FERMENT CO.,
JERSEY CITY, N. J.

106 CASES

**DIABETES
MELLITUS**

(IN THE PRACTICE OF
ELEVEN PHYSICIANS ALONE)

CURED

BY

ARSENAURO.

DOSE MUST BE PUSHED TO POINT OF
FULL SATURATION IN EACH INDIVIDUAL
PATIENT AND CONTINUED FOR A PROTRACTED
PERIOD AFTER ALL SYMPTOMS HAVE DISAPPEARED.

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Vino-Kolafra

(Wine of Kola)

A preparation made from pure malaga wine and absolutely fresh West India kola nuts, by special processes carried on without heat, whereby the full therapeutic value of the nut is secured and permanently retained. An elegant and palatable product.



ITS DISTINGUISHING FEATURES:

A powerful tonic stimulant without harmful reaction or after-effects.

Induces no habit.

Which qualities render it vastly superior to the many tonic wines heretofore employed in medicine.

The use of Vino-Kolafra as a tonic is indicated in anæmias, in chronic affections of a debilitating character and in convalescence from severe ailments.

“In nervous derangements due to digestive disorder, it is greatly aperient and stomachic.”—**MONNET.**

“As a heart tonic so gratifying are the results that we may say of it that in the last stages of cardiac affections it sometimes works resurrections.”—**SCHUCHARDT.**

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INDICATIONS:

Gout, rheumatism, uric acid diathesis, constipation, acute and chronic, hepatic torpor, obesity, Bright's disease, albuminuria of pregnancy, asthma, incontinence of urine, gravel, cystitis, uro-genital disorders, chronic lead poisoning, headache, neuralgia, neurasthenia and lumbago. It is also indicated in all cases where there is a pronounced leaning to corpulency, reducing to a minimum the always present tendency to apoplexy. In malaria because of its wonderful action on the liver increasing two-fold the power of quinine. Hay Fever.

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Caroid Powder.—A product representing the digestive possibilities of the ferments of the *Carica Papaya* and *Brassica Oleracea*; an amorphous and nearly tasteless powder, pale yellow in color, readily soluble in glycerine and water, and active in acid, alkaline and neutral media. Caroid Powder is put up in ounce and one-half pound bottles.

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℞ Caroid, gr. ij.
Sacch. lactis, q. s.

(In bottles containing 150 and 500.)

R Caroid, gr. j.
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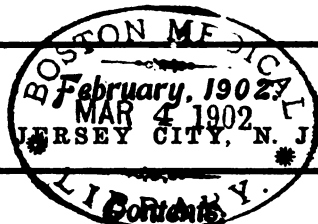
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Typhoid Feeding Number.

The Alimentary Review.

A Medical Journal Devoted Exclusively to the Consideration of
Food, Diet and Digestion; Comprising a Summary of the
Latest Scientific Investigations on the Subject of
Artificial Digestives and the Importance
of Environment in Determining the
Enzymotic Action of Vegetable
and Animal Ferments.

Vol. I.



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The Alimentary Review.

A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

VOL. I.

JERSEY CITY, N. J., FEB., 1902.

No. 3.

ORIGINAL ESSAY.

TYPHOID FEEDING.

To feed, or not to feed, that is the question:—
Whether 't is better in the end, to suffer
The stings of hunger from outrageous dieting;
Or to take up food against our gastric troubles,
And, by digesting, end them?

Had Shakespeare known more of the trials of the physician, or had he chanced to become the typhoid victim of one, we doubt not that Hamlet's famous soliloquy would have been couched in terms somewhat like the above; for, from the days of Spigelius, the eminent Italian author who first described the disease (in 1624), down to the present time, the dietetic treatment of typhoid fever has been a *bête noire* to the medical profession. Although clinical investigations during the past two years have shown that a more liberal dietary may well be allowed, and that the convalescence of the patient will be shortened materially in consequence, yet the majority of writers on this important subject still persist in

advocating the old starvation plan of treatment.

And why? Why has it been, and, by some, is yet considered necessary to deprive the typhoid patient of the advantages of nourishing food? Why should we allow his strength to become exhausted and his body emaciated from the ravages of fever, without an effort at self support? Even in the most recent text-books we are taught that irrespective of the condition of the patient and his apparent fitness, and ignoring the type of his attack, we must not permit solid food, not only during the acute stage, but "*till his temperature has been normal for ten days.*" As one writer states: "It is impossible to have treated many cases without being struck with the hardships of such a rule in some, and with its impracticability in others." And yet this procedure could not have received so generous support at the hands of the profession, and been carried out religiously for so many years, without very important practical

reasons being advanced for doing so. That there are such reasons, any one who is familiar with the treatment of these cases must be willing to admit. But there are equally important reasons why such a plan should not be adopted, and it is to harmonize these opposing views,—i. e., find a common ground to stand upon—that we wish to offer here a few suggestions.

The principal objections to a more liberal diet (until, at least, three weeks after the termination of the attack), are: 1. That the physiological processes are so altered during the febrile state as to interfere with the proper digestion of food. 2. That an inefficient digestion leaves a large residue of food which undergoes fermentation, causes distention, irritates the ulcerated and catarrhal bowel and increases the danger of hemorrhage; also forms a favorable culture medium for the various bacteria, so increasing the toxemia, which in turn hastens the disintegration and enhances the danger of producing perforation of the bowel owing to undigested particles increasing the catarrhal state or mechanically causing a rupture as they are forced along the intestine. 3. That the too early administration of food is the possible production of a temporary fever or even of a definite relapse.

On the other hand, those who favor a more liberal diet claim that the vital points to be considered in the course of treatment of typhoid fever are: 1. Exhaustion, from continued drainage of the body, especially if a prolonged

diarrhœa exist, in which large quantities of serum are lost and the blood supply weakened—the heart and circulating apparatus indicating a demand for greater stimulation. 2. Continued fever means continued loss of fat and muscle and rapid emaciation, as well as loss of strength from recumbent position and from absence of substantial foods. 3. Convalescence will be tedious and prolonged in proportion to the amount of tissue waste to be supplied, caused by the ravages of the fever and previous lack of nutriment.

The question, then, is whether it may not be possible to support the strength of the patient and yet avoid the dangers of intestinal irritation. Cannot we substitute for the rigid diet rules so long observed, a more liberal and varied feeding and thus initiate a speedier convalescence and prevent frequent deaths from cardiac failure and exhaustion? This question has already been partially answered in the affirmative. Many experiments have been recorded during the past two years of the more liberal feeding of typhoid-fever patients, and in each instance there has been conclusive evidence of its value. It has been shown that "*it is not so much solid food as the indigestible which should be eschewed.*" "It should not be forgotten," says one prominent author, "that all foods, except such as have been predigested, are solid in the first stage of digestion. A pint of milk contains as much solid material as a mutton chop and will take as long to di-

gest. If all food is thoroughly disintegrated before entering the intestine we need have no fear of mechanical irritation of ulcerating surfaces." [Cf. Brown in *Med. Rec.*, Dec. 1, 1900.]

Milk has long been recommended by the majority of physicians as the staple article of diet for typhoid patients. And yet there are many patients who cannot subsist upon it, and others in whom the precipitated casein causes pultaceous stools and violent intestinal irritation. Selby believes (Cf. *British Lancet*, Nov. 2 1901) that "milk should not be given as a diet to enteric fever patients because it in many cases forms a hard cheesy curd in the stomach;" furthermore, that "the bacillus typhosus breeds rapidly in milk, and toxins are produced." "If one insist upon an absolute milk diet," says Shurtleff (Cf. *The Toledo Med. and Surg. Reporter*, Nov., 1901), "not unfrequently will you find your patient has gone without it rather than take it. They fret under its administration, digestion is interfered with, curds swarming with bacteria of decomposition are found in the increased diarrhœal discharges, plus the bacteria of typhoid fever already existing, hence the object which we wish to attain so far as possible (that of rendering the gastro-intestinal tract aseptic) is defeated from the outset by error in diet." "Milk," says Prof. Tuley, (Cf. *Jour. A. M. A.*, Nov. 2, 1901) "is not suited for every case as an exclusive diet throughout the entire course of the disease; the curds, which form in larger masses than

in health may, and most frequently do, act as an irritant to the inflamed area of intestines, doing the same damage that may result from solid food." Others are of the opinion that the so-called "typhoid stool" is but the mass of milk coagula which have passed the bowel partially undigested.

What, then, shall be done in such cases? Have we not, as a matter of fact, a problem to solve similar in all its essential features to that of infant feeding? Are we not confronted with a condition similar to infantile maldigestion or the entero-colitis of children? There is no doubt, that in the disease we are considering the bacillus typhosus while the initial is not the preponderating factor in the toxemia. Various other bacteria are present. It has been demonstrated that the digestive secretions of the typhoid patient (as well as of the infant) are deficient in the organic constituents upon which depends their effectiveness; i. e., they are deficient in the constituent enzymes. For this reason, the casein of milk is precipitated only, it is not disintegrated—not properly digested. The same may be said of other proteid foods, as well as of carbohydrates. Furthermore, owing to the loss of this enzymotic activity, the bacteria of decomposition are permitted to multiply and thrive; for, that the natural ferments are germicidal in action has long been suspected. The natural antiseptics of the gastro-intestinal tract are lacking, and in their absence the undigested or partially digested food becomes the habitat in

which are bred myriads of forms of germ life—the result of which is decomposition, fermentation, putrefaction, etc.

If, then, we cannot adopt the suggestions of Graves, and his recent followers, Bushuyev, Moorehouse, and others, and give solid food, and, on the other hand, if we cannot give milk, what can we give? Whey has been recommended. Fischer says (Cf. *Jour. A. M. A.*, Nov. 9, 1901) that this is one of his favorite dietetic remedies. It is "made by peptonizing the milk at a temperature of about 115, beating up the curded milk with a fork until the curd is evenly divided, then straining this liquid whey through a cheese cloth." Selby, too, has employed this method, with the result that the death rate of his patients has been reduced from 15.5 to 2.7 per cent. in 73 cases. The whey contains about one-half as much solids as the milk does. He gives figures showing how 4 pints of whey may be a sufficient daily diet for an adult typhoid fever patient. His method of preparation is to stir two teaspoonfuls of rennet into one quart of milk, warming slowly until it curdles. The curd is then broken up and strained through a fine linen.

Though the above plan is doubtless an improvement in one important respect—i. e., digestion is aided and intestinal irritation prevented—yet its author admits that "the amount of emaciation varies very much," but not more than it does on the old milk diet. In other words, the usual great loss of flesh and strength is observed, and a protracted conva-

lescence ensues. Though by this means the food ingested has been properly absorbed, it has been insufficient for the patient's needs. Can we not, then, carry out this same idea to its legitimate conclusion, and aid the natural processes, not only in the digestion of milk casein, but in the digestion of other proteids and even of carbo-hydrates? Can we not render aid to the other gastric and intestinal ferments (besides rennet), which the febrile state has disordered, and thus furnish the system with the nutriment and support it so sorely needs?

For the accomplishment of such a purpose, it is obvious that an unconditioned ferment is required—i. e., one which is unrestricted in its action; one which possesses both proteolytic and amylolytic properties, and which will act in the alkaline intestinal juices as well as in the acid secretion of the stomach; in short, one which will continue its enzymotic action until the food (proteids or otherwise) is entirely absorbed, and thus, incidentally, and at the same time, *inhibit bacterial growth*. It is unnecessary to state that neither pepsin, nor pancreatin, nor rennet, nor any other animal ferment, can fulfil these indications. It is to the vegetable world (where environments require such action) that a general ferment of this character must be sought; and it is in the enzymes of the *Carica Papaya*, as selected and combined in Caroid, that these varied requirements have been most fully met.

The value of Caroid as a digestant is already well known to

the profession; and, in infant feeding, its therapeutic worth in this respect has been demonstrated in a practical manner by Dr. Pemberton, in the cases reported by him on a subsequent page in the present issue—to which we would now direct especial attention. We, of course, do not wish to convey the idea that, in typhoid feeding, any and all kinds of food should be allowed, but we do maintain that with the aid of Caroid as a digestant, a more liberal and substantial diet may be recommended than has hitherto been accepted; and that, as a consequence, less exhaustion and loss of flesh and strength will be observed, as well as less intestinal irritation.

If the patient is a child,—or, if an adult, and during the acute stage milk be insisted upon as the standard diet—then we would recommend for adoption the plan followed by Dr. Moorehouse (Lakeside Hospital, Cleveland, Ohio), and give 8 ounces (according to age) every two hours—subject, of course, to special directions as to night feeding. To insure thorough absorption, and prevent the formation of indigestible curds, one or two grains of Caroid should be given with each feeding. Or, if desired, the milk may first be Caroidized as follows: To each feeding of 8 ounces, one or two grains of powdered Caroid, or a teaspoonful of Caroid Essence, may be added; and, when the curd has set (which occurs within two or three minutes) beat it up with a fork or spoon until it is almost re-liquefied, then feed as usual.

In the majority of adult cases, however, the following more generous diets are indicated:

“1. *Liquid Typhoid Diet.* In twenty-four hours: Milk, 8 ounces four times; milk, 6 ounces with tea or coffee (one-half to one ounce) twice; albumin water, 8 ounces twice; beef tea, 8 ounces once; malted milk, 8 ounces once; chicken broth and barley water, each 3 ounces once; beef juice and barley water, each 3 ounces once. Those liquids which are to be given only once in twenty-four hours may be replaced by equivalent amounts of any of the following: Broths, milk-whey, slip, junket, strained soups or gruels.

2. *Soft Typhoid Diet.*—Add to the liquid or milk diet: (1) Ice cream, well-cooked rice (boiled), broths may be thickened with it; (2) soft boiled or poached egg on soft toast, blanc mange and milk puddings, calf's foot and other gelatine jellies; (3) gruels, crackers or bread softened in milk or broths, macaroni, finely minced and scraped meats. The increase in diet to be very gradual, one addition the first day, two the second, etc., scraped beef on the fourth or fifth day.” To each of the above feedings two or three grains of powdered Caroid, or half a teaspoonful of Essence of Caroid should be given.

In the same manner, the digestant should be administered with each feeding, (after the fastigium has been reached and a still more liberal diet is allowed,) as in the following:

“1. *Typhoid Convalescent Diet.*—Add to anything already given the

following in about the order mentioned. Soft parts of oysters, a tender sweetbread, chop, squab, game (small), chicken, fish, cutlet, steak, rare roast beef. Mealy baked potato may be given with any of the meats.

2. *Full Typhoid Diet*.—Six A. M., milk; 8 A. M., (breakfast,) a cereal with cream and a small amount of sugar if desired, milk with tea or coffee, egg on toast, bread or toast with butter if desired; 10 A. M., bread and butter, with gruel or milk, or broth with egg; 11:30 A. M., (dinner,) soup which may be thickened, some meat, as chop, or cutlet, or fish, or steak, or roast beef, or the soft parts of oysters, or sweetbreads, or squab, or small game, mealy baked potato, or rice, or macaroni, or spaghetti, with a simple dessert, as ice cream, or blanc mange, or milk pudding; 2 to 3 P. M., like 10 A. M., 4 to 4:30 P. M., (supper,) creamed chicken, or a bit of cold meat, as chicken or roast beef, bread, and milk flavored with tea or coffee; 6 P. M., cocoa or gruel or broth. At night, milk two to four times."

The writer does not (nor does Dr. Moorehouse) claim the merit of originality for the above diets.

The liquid typhoid diet and the soft typhoid diet are modeled on the lines of diets he was acquainted with in his medical service at the Massachusetts General Hospital in Boston. The full typhoid diet is an adaptation of the diet used by Dr. Bushuyev, and while it may seem that the meals recur with great frequency, yet one or two feedings used by that distinguished author have been omitted. At the

Lakeside Hospital, says Dr. Moorehouse, on the occasions when milk was very repugnant to the patient the liquid typhoid diet was ordered, and in some rare instances milk was wholly omitted from the bill of fare. While ordinarily the change from a less to a more generous diet must be gradual, in the cases last mentioned the change to a more liberal diet was made as promptly as possible. The full typhoid diet has been added to this list for the sake of completeness, and in view of its possible use in case any physician should desire to begin the use of solids at an early stage of the disease. Furthermore, it was designed as a possible variant to the convalescent typhoid diet. Its use, however, has not been extensive as yet in hospital practice.—[Cf. Feeding in Typhoid Fever, with a Report of Cases, in *Boston Med. and Surg. Jour.*, Nov. 15, 1900; and Typhoid Fever at the Mass. Gen. Hospital During the Past Seventy-Eight Years, in *Ibid.*, Vol. CXLII, No. 21].

In concluding his remarks on the cases treated at the hospital at Cleveland, Dr. Moorehouse says:

"It is probably true that the usual arguments against early feeding in typhoid fever, so far as they refer to the occurrence of a relapse would lead one to believe that if feeding in the manner detailed is a cause of relapse and is therefore 'improper feeding,' such relapse is to be expected immediately upon the issuance of the order for the more generous diet. The chart, which shows the average highest temperatures in the patients who were fed before normal temperature on the day of the first feeding, and for one week before and one week after that time, a total of fifteen days, indicates very clearly that *feeding does not interrupt the defervescence*.

The important features in these diet lists are two, the articles permitted, and the directions for the increase in diet, ensuring the gradualness of any increase from a less to a more generous diet level, but the new level was fully reached in the average case in about four to five days, whether it was a change from milk to soft or from soft to convalescent diet. There were in the entire number fed 117, 159 orders increasing the diet at a stage of the disease early enough to make it seem advisable to report them, and in only 10 of these cases, 6.3% of all instances of increase of diet, was there any irregularity of temperature which could have been called a relapse within a period of seven days from the time of the increase in the diet; 11 more, or 6.9%, had the step-like rise of temperature in from eight to twenty-one days after the order increasing the diet, a total of 13.1% of relapse at any period after increase of diet, while no such change occurred in 138, the remaining instances."

—:O:—

EDITORIALS.

PRECIPITATION VS. COAGULATION.

Dr. Robert T. Edes (Cf. *The Medical Times*, July, 1901), gives the following method of preparing milk where other methods have not proved useful:

"A pint of milk is gently warmed. Into it is dropped, very slowly and with constant stirring, about twenty minims of dilute hydrochloric acid. The milk should be stirred until it cools. In this way a very fine flocculent coagulum (?) is produced, floating in the whey, which is easily accessible to the digestive secretions, while the whole fluid has lost somewhat of the flat and cloying taste which makes it unacceptable to so many. It will be noticed that milk prepared in this way differs from the various wheys in the highly important particular that the casein is retained and used, instead of being separated out as a distinct product, while it avoids the bitterness of pancreatinized milk."

We are a little skeptical concerning the utility of the above method

of preparing milk for infant feeding. It is well known that the *precipitation* of casein with dilute acids is quite a different affair than the *coagulation* of casein with rennet. The latter process is what takes place in the infant's stomach, and as our object is to assist in this work, or at least, render the process less difficult to perform, it would seem necessary to adhere to nature's plan and furnish contributory means with that end in view, i. e., offer aid in the direction in which it is most needed.

In infantile maldigestion, there is already a superabundance of acid in the stomach, causing such rapid precipitation of the casein as to forestall the action of the rennet which produces a coagulum or chemical change in the casein while the latter is in solution. To quote J. Reynolds Green: "When casein, either in milk or in solution in dilute alkalies, is acted upon by rennet, it is at once chemically altered. It gives rise to the formation of a body (tyrein) which is the proteid constituent of the clot. The formation of this by-product, when *solutions* of pure casein are treated with rennet, shows that it results from the alteration of the casein. The clotting of milk by rennet is consequently not to be confused with the precipitation of casein by acid."

It will be seen that the stomach needs no aid in this last direction. In fact, it would be better to furnish an alkali to neutralize this excessive acidity; for the casein, which is then held longer in solution (being partially soluble in alkalies), would be exposed longer to the action of the rennet. It is for this reason, that lime water in the milk is often found efficacious. Instead of precipitating the casein with acids, therefore, our attention should be directed toward furnishing some means by which it may be coagulated and rendered fit for absorption. Barley water and other starchy or dextrinized solutions have been given because of the peptonizing action of the ferments which they contain; i. e., disintegrating the curd, rendering it softer and more easily absorbed. But while cereal infusions are doubtless an aid to the natural ferments, and help to form a finer and more flocculent curd (as far as the casein is concerned), yet this effect is produced satisfactorily only in milks which contain a low percentage of fat. The curdling process, as is well known, consists essentially of a separation of the *fat* and casein from the easily absorbable proteids and carbohydrates. To produce a fine "emulsion," therefore, as well as a "flocculent" curd, an agent is needed which will aid the fat splitting fer-

ment of the infant's intestine, thus permitting feeding with milk containing this important constituent in its normal proportion. Instead of reducing the fat below nutritional requirements, as is often done in hot summer months, owing to intestinal disturbances caused by its presence undigested, we may aim to effect its more thorough emulsification.

It has been shown by the experiments of Chittenden and others that the vegetable ferment, Caroid, not only possesses greater proteolytic properties than pepsin, in its action upon proteids, but also has a marked rennet-like action upon milk, separating both fat and casein from the soluble whey proteids and forming a coagulum in fine, feathery flakes. Advantage has been taken of this property in the preparation of milk for infant- and typhoid-feeding; and "Caroidized milk," prepared in the manner suggested in the previous "essay," may now be prescribed in all conditions of infantile or febrile maldigestion in which an aid to the normal processes is required to effect the thorough digestion and absorption of the fat and casein of cow's milk. Concerning the utility of Caroid in this respect, we would direct attention to the cases reported by Dr. Pemberton on a subsequent page in the present issue.

OBJECT OF THE ALIMENTARY REVIEW.

As a number of our correspondents have evinced some curiosity to know why the title-page of the REVIEW does not contain at its head an item of information which is usually deemed (at least by the publishers) one of the most essential features of any journal, we have considered it but fair that a full and frank explanation should be given concerning our reasons for such omission. The following letter, therefore, has been selected from among many others recently received, in which this point has been made the subject-matter, and published here together with our answer, in order that there may be no further possibility for misunderstanding:

"*The American Ferment Co.*

DEAR SIR: I have seen the first number of your journal—THE ALIMENTARY REVIEW—and I wish you to send it to me for six months and let me have your account for the subscription, and I will remit. *There is nothing to show what your fee is for it!* I have ordered some of the Caroid Tablets (through my druggist here) from Lyman Bros., Toronto.

Yours very truly,

M. WALSH,

Ingersoll, Ont., Can., Oct. 26, 1901.
Walsh's Block, Thames St."

ANSWER: We wish to state candidly at the outset that THE ALIMENTARY REVIEW is published with a commercial object; i. e., *advertising*. Already the medical profession in this country is flooded with a host of monthlies and

semi-monthlies, quasi-medical in character, whose declared motives are altruistic, but whose real object is to advance the cause of some product or products in which the publisher or his silent partners may be interested. It is not our purpose here to sail under any false colors. The REVIEW makes no pretense except to furnish useful information about a comparatively new product in a straightforward manner. Therefore, no subscription price has been mentioned; none will be charged; and none will be received.

We wish it to be understood that a copy of each number of this journal will be mailed to every English speaking physician of the world; that its pages are intended solely for the eye of the medical profession and none other; and that the use of Caroid is discountenanced in any manner except under the doctor's personal supervision and direction. While the arguments advanced from time to time will converge along the lines of this particular digestant, yet the matter of food, diet and digestion, will be presented in all other bearings fairly, and, we trust, with some profit to the practitioner who is interested in this subject.

Syrup of ipecac should be discarded as slow and uncertain.—*Ex.*

CARICA PAPAYA VS. NORTH AMERICAN PAPAW.

The belief seems to be quite prevalent among a great number of physicians in the United States, that the American papaw tree which grows generally in the Southern and South-Western States, is the papaw from which Caroid is prepared, whereas, as a matter of fact, it does not even belong to the same family, botanically, as the tropical Papaw (Carica Papaya). The following letter was recently received on this subject:

"GENTLEMEN: Having received THE ALIMENTARY REVIEW, I perused it with more than ordinary care and noted the frequent references therein to the Papaw, or Carica Papaya. I would like to ask you if you can explain the following: The Papaw is well known here, and there are not a few people who are easily poisoned by smearing the fruit on the face, which produces minute vesicles and pronounced swelling—in some cases closing the eyes for several days. What is contained in the fruit to cause such results?

Yours very truly,

A. H. BASKIN, M. D.,

Atlanta, Ga., Oct. 20, 1901."

The tree or shrub growing nearly everywhere in the Southern States, popularly known as the "papaw," is not the Carica Papaya from which the ferment Caroid is obtained, referred to in the pages of the REVIEW. The latter is found only in tropical countries, growing under proper conditions of temperature and moisture.

As stated above, the papaw of the South does not belong to the Papaya species, nor has it been

classed in the same botanical family. The tropical Papaw, or Carica Papaya, belongs to the order of Passifloraceæ; while the North American papaw is of the order of Anonaceæ, and is a tree of the genus Asimina (i. e., *A. triloba*). The Carica is a native of South America and West Indies. It is a tree about 20 feet in height, with deeply seven-lobed, saponaceous leaves 2 feet in diameter and borne on footstalks 2 feet long. The fruit is 10 inches long, ribbed, having a thick, fleshy rind and an acrid, milky juice. The fruit of the Asimina, on the other hand, is smooth, only 3 or 4 inches long, and filled with a sweet pulp. There is a large variety of this latter species in the South. Some of the varieties contain a corrosive property that produces a result somewhat like that described by Dr. Baskin. This corrosive property has never been isolated and analyzed so far as we know. The true Carica Papaya does not contain it.

AN ALIMENTARY FILTRE.

The complex processes of digestion result in the transformation of insoluble and indiffusible food stuffs into soluble and diffusible sugars and peptones. These, with the soluble saline matters, the finely divided and emulsified fats and water, and a small amount of leucin and tyrosin, are the only

contents of the alimentary canal capable of entering the organism from the outer world. They are not the only products absorbed however. A large part of the digestive juices themselves are re-absorbed and possibly made to do duty over again in their respective secretions.

The digestive tract is lined with a delicate layer of columnar epithelium and a filmy basement membrane. Through this the soluble food products pass by the physical process of osmosis into the blood and the lymph capillaries of the alimentary mucous membrane. These layers of epithelium are therefore nothing more than a filter used to separate soluble and diffusible matter from insoluble and indiffusible matter.

The importance of keeping the pores of this epithelium filter open will be illustrated by the simple process of filtering any albuminous substance (partly in solution) through ordinary filter paper. It will be seen that the filtering process becomes tardy in proportion as the pores of the paper are filled with the undissolved portion of the proteids. If the process be continued long enough the passage of the solution is stopped altogether.

From this it may be inferred how important it is to keep the alimentary filter clean or free from clogging matter; i. e., free, not

only from proteid food matter which has not been changed into peptone, but free from the mucus and catarrhal products of the irritated membrane itself. It is in just such conditions as this, so frequently met with in intestinal indigestion and catarrh, that a solvent like Caroid possesses its therapeutic value. Not only does it produce a more perfect albuminous solution (by its proteolytic action upon proteid foods), rendering diffusion easier; but, at the same time, it dissolves the disorganized tissue products which have collected upon and clogged up the filter, and thus, by removing obstacles to osmosis, the process of digestion and absorption is allowed to go on unimpeded.

—:o:—

CORRESPONDENCE DEPARTMENT.

Our readers are cordially invited to make free use of this department. Queries regarding the enzymotic action of vegetable ferments and their use in the treatment of disease—or any other question which comes within the scope of THE ALIMENTARY REVIEW—will be cheerfully and promptly answered. We also solicit clinical reports illustrating the action of the vegetable digestive, Caroid, in the treatment of cases, and will be glad to publish the same in this department for the benefit of our

readers who may wish to further investigate the subject. Answers to questions of a medical nature will be given only to medical men.

Letters intended for this department should be addressed to "Editor ALIMENTARY REVIEW," care of The American Ferment Co., 81 Steuben St., Jersey City, N. J.

CONVINCED OF ITS UTILITY.

The American Ferment Company.

GENTLEMEN: I have used the goods you recently shipped to me and am so thoroughly convinced of their utility that I am forced to call upon you for another supply. Please send me 500 each of your tablets, viz.: Caroid, Caroid and Charcoal, Caroid and Soda. Send bill and I will remit to you upon reception of the goods. I am needing the goods for patients at once. I wish to say that the results obtained from their use have been beyond my expectations. It is so rarely that remedies come up to expectations raised by the advertisements of the makers that I am more than pleased.

Very truly yours,

J. D. EGGLESTON, M. D.,

Worsham, Va., Dec. 21, 1900.

A CASE OF ACID DYSPEPSIA.

The American Ferment Company.

GENTLEMEN: I received the samples of your Caroid preparations, also followed your advice in reference to acid preparations, and can report much improvement. Think the Caroid a very admirable addition to our already numerous products for digestion. Much obliged.

F. M. PERINE, M. D.,

Dansville, N. Y., July 8, 1901.

NOTE: This letter was received from Dr. Perine in answer to our inquiry as to the results he had obtained in using Caroid in his own case (acid dyspepsia), concerning which he had previously

asked our advice. Inasmuch as the usual alkaline remedies had already been given a thorough trial, without appreciable benefit, we suggested to the doctor that he adopt the plan of Sir T. Lauder Brunton, and take H. Cl. (which is said by this author to *lessen* the acid secretion) about fifteen minutes before each meal; and that during the meals, two of the plain, or of the Caroid and Charcoal tablets be taken. Although an alkali administered with Caroid will generally give temporary relief in these conditions, yet, if long continued, alkalies have been found to stimulate the flow of acid; hence they are objectionable where the acidity is already excessive. Great hyperacidity is the worst condition which Caroid (in fact which any ferment) has to contend with, the excess of acid in some instances being so great as to inhibit the action of all ferments, including pepsin. Fortunately, however, this is a form of dyspepsia which is seldom met with, since in the majority of instances it is the lack of the acid, rather than an excess, which gives rise to digestive disturbances, and in such conditions Caroid acts with the greatest effect.—[EDITOR.]

EXPERIENCE WITH CAROID ESSENCE.

The American Ferment Company.

GENTLEMEN: It gives me great pleasure to express my experience with your Caroid Essence. The case referred to in my previous letter to you, was that of a baby, 22 months old. I was very much gratified with effects of Essence of Caroid upon him in teaspoonful doses after milk. It un-

doubtedly aided his digestion very much and decidedly lessened the number of firmly moulded curds. I have tried it in several cases since with good results. I sincerely commend your preparation for that form of infants' indigestion for which it is claimed to give the best results.

Very respectfully,
J. W. MOBERLY, M. D.,
Georgia State Sanitarium.

Milledgeville, Ga., July 15, 1901

NOTE: As stated in the "Note" appended to Dr. Healy's letter in our last issue, (p. 72), the preparation used in this case, the "Essence," is a permanent solution of the Caroid ferment, and is a *valuable vehicle* to be used whenever a digestive agent is wanted in combination with other drugs. Its palatability renders it an exceedingly desirable remedy to administer to children, and many physicians have used it in this form, in preference to the powder or tablet, as an adjunct in infant-feeding, in all cases where the action of the ferment was required to correct digestive disturbances. The "Essence" is put up in one-half and one pint bottles, and may be kept for any considerable length of time in a cool place. The dose is from ten or fifteen drops to a teaspoonful, according to age of the patient.
—[EDITOR.]

CAROID LAXATIVE TABLETS.

The American Ferment Company.

GENTLEMEN: Will you please send me 100 or more Caroid Laxative Tablets, or tell me where to get them? I had a few and they seemed so much more efficient than the same formula minus the Caroid, that I would like to try them further.

Yours truly,

— EDWIN H. VANDEUSEN, M. D.,
Philadelphia, Pa., Aug. 9, 1901.

NOTE: The statement made here, that the "Caroid Laxative Tablets"

R Caroid, gr. j.

Ext. cascarae sagradae, gr.

ij.

Podophyllin, gr. $\frac{3}{8}$.

Ext. belladonnae, gr. $\frac{1}{16}$.

"seemed much more efficient than the same formula *minus* the Caroid," is one which will be readily understood and appreciated by all who are acquainted with the solvent action of Caroid. It has long been recognized by physio-chemists that no state of solution is so favorable to the absorption of a medicine as its union with the organic solvents it meets with in the body; i. e., in the gastro-intestinal tract. "The stomach," therefore, as Prof. Stillé says: "is the organ best adapted by nature, and the one most usually employed for the introduction of medicine into the body." In a state of health, when the secretions from stomach and intestines are normal in character and amount, foods and drugs will be dissolved and readily absorbed into the circulation; but, in disease, (especially in constipation), owing to torpor of the stomach or intestines and consequent lack of their secretions, — medicines are usually slowly and imperfectly absorbed.

It is in these latter conditions that an unconditioned ferment of the nature of Caroid becomes so beneficial in performing for the time being the solvent action of the natural ferments, and aids in the absorption of food and drugs. Physicians are now beginning to realize that the successful treat-

ment of constipation requires something more than simply relieving the overloaded intestinal organs. They have learned from oft repeated experience, that some of the pathological conditions which co-exist may persist even after this result has been obtained; i. e., after the bowels have been relieved of their contents. "It will be seen, then," as one author states, "that in actual practice, to obtain proper therapeutic effects of the drug administered, the latter must meet conditions similar to those which are essential to the digestion and absorption of food itself. Any digestive agent, therefore, which aids or increases the action of the gastric and intestinal secretions; one which acts equally well in both acid and alkaline media; one, also, which cleanses the alimentary membrane by dissolving coatings of mucus that may collect,—cannot be otherwise than an effective aid to the absorption and consequent 'action' of drugs." For this reason, it will be seen why the addition of Caroid to such a combination of drugs as is represented in "Caroid Laxative Tablets" will produce far more effective results "than the same formula *minus* the Caroid."—[EDITOR.

OPINION OF A BACTERIOLOGIST.

The American Ferment Company.

GENTLEMEN: Having recently had an opportunity to compare the caroidization of milk (the digestion of milk by means of Caroid) with that of ordinary peptonization, —i. e., by pancreatin and bicarbonate of soda—I find that the caroidizing of milk is preferable to that of peptonizing. In comparing the two microscopically, I find that

the caroidized milk does not contain so many bacteria as the peptonized; and, at the same time, the caroidizing effect upon the milk seems to inhibit the multiplication of the bacteria, whereas in the peptonized they are increased on standing.

Respectfully,

W. FRANK GORDON, M. D.,
Danbury, Conn., Aug. 15, 1901.
258 Main St.

NOTE: The clinical significance of the above finding, in its bearings upon the treatment of gastric and intestinal disorders in the nursing or bottle-fed infant, is at once manifest. The rapid growth of bacteria in milk, (and its resultant fermentative changes) is one of the most commonly observed facts in nature. That the same "changes" do not take place in the animal's stomach, is because another, and counter-change is produced by the action of the ferments, and the milk is "digested," i. e., its casein is rendered soluble and is absorbed, leaving no suitable soil for the growth of bacteria. But unfortunately, in many instances, as is well known, owing to over-feeding and other causes, (especially in the bottle-fed), the natural secretions of the infant are deficient in amount, or unable to digest the casein, and curds remain to serve as a favorable culture medium. Fermentative changes occur, and the usual symptoms follow,—i. e., inflammation, diarrhoea, slimy stools, etc. In the treatment of this condition, it is evident that a ferment is required which will be effective not only in the acid secretions of the stomach but in the alkaline juices of the intestine; one whose antiseptic influence is exerted throughout,

and which will continue the process of proteid (casein) digestion until complete absorption has taken place. For this purpose, the effect of Caroid may be obtained by prescribing it in powder or tablet form after each feeding; or if preferred, the caroidized milk itself may be given, in which case it should be prepared fresh for each occasion.—[EDITOR.]

"CAROID SOLVENT"—A PURIFIED SOLUTION.

The American Ferment Co.

GENTLEMEN: Dr. Blackman, of Vernon, Texas, has recommended to me the use of Caroid as a digestive ferment, and of Caroid Solvent as a local application in eye cases. I would be glad to know about the above article and would greatly appreciate any literature you may send me concerning especially the Caroid Solvent, bearing on its use in either eye or ear practice, also any information that may be useful to me in applying same. I noticed yesterday, when doing a little testing of Caroid that upon coming in contact with the saliva it does not seem to be entirely soluble, which would be decidedly objectionable in eye practice, if used in the powdered form.

Yours very truly,

H. F. FISHER.

Kansas City, Mo.

ANSWER: It is true that a solution of Caroid, as ordinarily prepared, contains more or less albuminous matter not readily soluble. This, as you say, would be objectionable in eye practice, and would also tend to clog the holes of syringes used in spraying the nasal and aural passages. For this reason, the Caroid Solvent (which is a purified solution) has been specially prepared by the manufacturers for use as a physiological solvent. Concerning the method

of application, we would state that it is usually employed in the form of a spray for the removal of dead organized tissue, pus, or the various tough and fetid secretions occurring in the nasal and aural passages; while for the removal of stains, etc., in the skin, it is pricked into the stains with fine needles as in tattooing, and in some cases a fine hypodermic needle is resorted to. The power of Caroid to dissolve and peptonize fibrin has led to the employment of the "Solvent" for the purpose of removing India ink in tattooed subjects, where it dissolves the capsule which surrounds the foreign substance, the dissolved capsule and resulting inflammatory exudation washing out the pigment after it has been set free. Concerning the use of the Solvent in eye practice, we would refer the doctor to a letter on this subject published in the December number of THE ALIMENTARY REVIEW, (64-66).—[EDITOR.]

MOST JOBBERS HAVE IT.

The American Ferment Company.

GENTLEMEN: Enclosed find exchange for \$2.00, for which please send us by return mail five hundred tablets of Caroid and Soda. We have lately begun the use of Caroid and so far have been pleased with it, the only drawback being the trouble of obtaining it, since we buy most of our medicine from manufacturing pharmacists who do not handle it.

Very truly yours,

BURKE & NORMAN,
Physicians and Surgeons.

California, Mo., Aug. 16, 1901.

ANSWER: We would state that your local druggist should experience no difficulty in securing a sup-

ply of Caroid preparations, for they are held in stock by all of the principal wholesalers throughout the country. But, in case he should refuse to accomodate you (which he ought not), the manufacturers, themselves, will be pleased at any time to fill your order and forward by mail, post-paid, at the usual prices.—[EDITOR.

INDIGESTION, NON-ASSIMILATION AND MAL-NUTRITION.

Editor Alimentary Review:

Caroid preparations duly received, and I immediately placed my patient upon its use. The case was an adult male, aged 36, who had always been in apparently good health, except an occasional attack of indigestion. Early in the present year he began to suffer from frequent attacks of indigestion, which so speedily undermined his health, mentally and physically, that I (his family physician) was sent for. The host of usual remedies were tried without avail. The patient, instead of improving, rapidly grew worse, exhibiting all of the signs of non-assimilation of food and general mal-nutrition. Having seen your notes regarding the use of Caroid in similar conditions, I at once procured a supply of the drug, and a few weeks ago began its use in this case. So far, the most marvelous result has been achieved. The bowels have become regular; the coated, furry tongue has disappeared; the appetite is splendid; and, above all, perfect digestion and assimilation is performed, and the patient is gaining strength rapidly. He takes no medicine except Caroid, and says he needs no other, believing that he will soon be a "well and sound man." When I last saw him, I hardly recognized his face—which had become so full and plethoric looking. I truly believe that, in this instance Caroid has saved what would otherwise have been a doomed man. His bowels were so disturbed—his food passing unchanged—and there was such great emaciation, that one not familiar with this condition would probably have pronounced it "scrofula" of

the bowels, or "bowel consumption." In conclusion let me say that in Caroid and its preparations I believe we have at our easy disposal a *perfect and harmless digestant*, that no drug on any market can cope with. It is an inexpensive article and its dosage is small. My patient takes about four grains of the powder with each meal. I would suggest its use in the treatment of all bowel complaints and in exhausting diseases in which the gastrointestinal tract is easily disturbed,—as in typhoidal and dysenteric troubles. Of course some effective cholagogue agent (such as Caroid Laxative tablets) should be given before commencing the above treatment so as to insure a "clean liver."—Then look for good results! While, of course, Caroid is comparatively new to me, yet, a thorough test, in such a suitable case as the above, and the marvelously quick results obtained, enable me to conscientiously recommend its universal administration in all similar conditions. I shall give it further careful clinical study in the near future, and report the outcome to members of the medical profession who are not yet acquainted with its virtues—and in this way may hope to accomplish much toward aiding suffering humanity. I am,

Yours truly,

C. O. BUCK, M. D.,

Lexington, Miss., Sept. 18, 1901.

NOTE: The history of the above case is a good illustration of the fact, that the phenomenon of life, or the manner in which the living organism is maintained in a normal condition of life or growth, is expressed in the comprehensive word, NUTRITION. As one prominent author states: "There may be, and often are, conditions in the human body in which there is failure or inability on the part of the cells to take up and appropriate the pabulum supplied in sufficient quantity by the blood. But, by far the greater fault lies in a deficiency of material, and this deficiency exists, not because there is too small a quantity of food ingested

to meet the demand, but because there is a failure to convert a sufficient quantity of the food into a soluble and suitable form for absorption." We often see thin, pale and spindle-legged children eating much more food than other children who are plump and ruddy, while under like conditions. And here again the question of how we shall remedy the fault is obviously, not how much more food we shall give, but how shall we aid the child in making use of the food already taken. We must apply ourselves to the task of solving the problem of how to increase the digestive function or else how to do the work artificially until such a time as the increased absorption of nutriment builds up the strength to the point where the natural process of digestion can do the work.—[EDITOR.]

FOR REMOVAL OF TATTOO MARKS.

Editor Alimentary Review:

I have found Caroid tablets satisfactory in gastro-intestinal catarrh, but after repeated and careful trials for removal of tattoo marks by the method suggested by Dr. A. H. Ohmann-Dumesnil of St. Louis, the Caroid Solvent has proved absolutely inert. Either the preparation was at fault, or I failed to understand the directions for using it.

Truly yours,

A. F. PIPER, M. D.,

Rockport, Me., Sept. 14, 1901.

ANSWER: The above letter being referred to Dr. Dumesnil he answers as follows: "In my opinion the fault lies in the technique of Dr. Piper. He probably does not perforate the skin to a sufficient depth. No doubt, too, his

case is one of tattooing of many years' standing. In the next place, there must be an excess of Caroid Solvent in the compress (compress must be saturated), and rubber tissue must be placed over it to prevent evaporation and promote absorption. The work must be done with great care and very thoroughly to obtain any result whatever."—[EDITOR.]

THE SUBJECT OF OVERDOSAGE, INCOMPATIBILITY, ETC.

Editor Alimentary Review:

Kindly send us any literature you have relating to Caroid and its preparations. What effect would it have in overdoses, and what is the maximum dose of it—also any incompatibles? Yours truly,

SHINN & BAER,
Apothecaries.

Philadelphia, Pa., Oct. 2, 1901.
1400 Spruce St.

ANSWER: The action of Caroid differs in no-wise from the action of the natural digestive secretions. There is practically no dangerous dose of Caroid, nor of any of the other commonly used digestive ferments, whether of animal or of vegetable origin. Nature has provided a limit for their action which stops at live tissue. The American Ferment Company has administered Caroid to dogs in doses as high as 150 grains with no untoward results. The ordinary dose is from one to three grains. The maximum dose is usually five grains, though larger doses may be given—the only objection being useless expense. Caroid may be administered in connection with almost any drug. Prof. Christenden

has shown that its action in the presence of salicylic acid, mercuric chloride, carbolic acid and other antiseptics, is in nowise altered, and that it may be given with equal confidence with antipyrin acetanilid and similar drugs.—
EDITOR.

FOR CONSTIPATION.

Editor Alimentary Review:

I had the pleasure of receiving yesterday, Vol. 1, No. 1, of THE ALIMENTARY REVIEW, for which accept my thanks. I would be pleased to receive it regularly in the future. I have never used Caroid preparations, and I would be pleased to have you send me supply of Caroid tablets plain, and Caroid Laxative tablets. I wish to use the latter in my own case, for constipation, with which I have been troubled for some time. Thanking you in advance for your kindness, I remain,

Very truly yours,

W. A. MILLS, M. D.,

Milton, Fla., Sept. 21, 1901.

ANSWER: Concerning the "objects" of THE ALIMENTARY REVIEW, the manner of its publication, etc., we would refer the doctor to our remarks on this subject in the Editorial column of the present issue. He will also find in our note appended to Dr. Van Deusen's letter, in the Correspondence department of this issue, some thoughts on the subject of Caroid Laxative tablets in the treatment of constipation.—[EDITOR.]

PREFERS THE POWDER.

Editor Alimentary Review:

I have met with most satisfactory results from the use of Caroid. I have read several articles, which I found in THE ALIMENTARY REVIEW, principally upon the

different combinations of Caroid,—but all in the "tablet" form. I prefer the powder instead of the tablet. It requires some time for the tablet to dissolve and mix with the food. Whereas, if I prescribe the powder, in two to five grain doses—one powder to be taken during the meal and another immediately after—I always get enthusiastic reports. I have written several articles upon "intestinal indigestion." I believe at least thirty per cent. of the troublesome and obstinate cases of dyspepsia are of intestinal origin, of a catarrhal type, and largely due to catarrhal conditions. I think that a combination of Caroid, with a remedy peculiarly fitted and designed to act on the mucous surfaces of the bowels, would achieve an unlimited and well-merited success, e. g., hydrastis, eucalyptus, and many others, with the therapeutic value of which you are perfectly familiar, would produce an harmonious union of immense value. Without having concentrated my mind, energies, and time, on the investigation of intestinal indigestion, sufficiently to blossom out as a specialist, yet, I have for many years given every patient, who applied to me for treatment of dyspepsia, a rigid and merciless examination, separating the host of symptoms and noting each phase and form, as to its gastric or intestinal character. I also think that Caroid might be put up in a fluid form, which to a majority of patients would be more acceptable than in tablets. Trusting that you will excuse my boldness in making these suggestions, I am,

Respectfully,

ANDREW JAS. PARK, A. M., M. D.,
Chicago, Ill., Sept. 21, 1901.
520 E. 50th St.

ANSWER: We are not only grateful for the above suggestions but also acknowledge their significance. The doctor is perhaps not aware, however, that Caroid has already been prepared in the form of a liquid—as Caroid Essence. There are many desirable combinations to be had with Caroid, a few of those which seemed doubly important being already embodied in the form of the "Soda," "Char-

coal" and "Laxative" tablets. Any other combination of drugs may be effected by the physician himself, since Caroid powder or Caroid tablets "plain" may be prescribed in conjunction with any other agent or agents desired. Concerning the comparative merits of the "powder" and "tablet," we would state that the ferment has been prepared in both forms in order to meet the requirements of all cases.—[EDITOR.]

of the gastro-intestinal tract,—e. g., myositis of the abdominal muscles, or, perhaps, biliary, renal or vesical calculi? It would seem to be a case in which considerable care should be observed in making the diagnosis, for upon its correctness, of course, hinges the character of the treatment to be adopted. Should the trouble be of intestinal origin, we have no doubt that the plan which you intend to pursue will bring successful results.—[EDITOR.]

IRON AND STRYCHNINE WITH CAROID.

Editor Alimentary Review:

Please forward me a supply of Caroid tablets, composed of the following ingredients, viz.:

"R Caroid, gr. j.
Charcoal,
Acid. boric, aa gr. iss.
Sacch. lact., q. s.

Sig. Dose. Two tablets immediately after each meal."

I have a patient confined to bed who is very weak. When he tries to walk, he has keen, lacerating abdominal pains which force him to seek his bed. Bowels act daily. He is much debilitated, and has lost flesh rapidly. Would you recommend iron and strychnine in combination with the Caroid tablets? Please advise me on this point, and oblige,

Very truly yours,

B. S. KITTLEO, M. D.,
Yemassee, S. C., Sept. 22, 1901.

ANSWER: Yes: iron and strychnine may be prescribed in conjunction with Caroid; but it would be better to give the Caroid tablets during, or directly after meals, and the iron and strychnine a few minutes later. Is it not possible however, that the lacerating pain described in this case may be due to causes other than an affection

THE ESSENCE USED AS A VEHICLE.

Editor Alimentary Review:

Some time ago I received samples of Essence of Caroid, which I tested for myself. I was so pleased with the results that I now employ it entirely in place of my former vehicles—the animal pepsins—in which to administer aspirin and other forms of anti-rheumatic remedies. I wish now to test its value in the case of a patient who suffers from stomach trouble, for which I have given the tablet of Caroid and boric acid. In my own case, when I have suffered from any form of indigestion, I have used the Essence much to my satisfaction. I may also mention that a friend, who was away, sent to me a case which he had been treating for obscure stomach trouble for several months. Here I employed the Essence, adding for the pain the pulverized acetanilid compound of the National Formulary. It was so beneficial that the doctor on his return sent to me for the prescription, and I referred him to you for literature, etc. With best wishes, I am,

Sincerely yours,

WILLIAM B. ATKINSON, M. D.,
Ex-Sec'y Amer. Med. Asso.

Philadelphia, Pa., Oct. 30, 1901.
1400 Pine St.

NOTE: The suggestions made here concerning the use of Caroid Essence as a valuable vehicle for other drugs, will doubtless meet

with a hearty reception at the hands of the majority of physicians throughout the country, who recognize the author for his long and eminent services (extending over a period of thirty-five years) as Secretary of the American Medical Association. We are especially pleased that the attention of the profession has been directed to this therapeutic point by so well-known and respected a practitioner as Dr. Atkinson, not only because of the greater confidence which will be felt in employing a method which has been thus recommended, but because of our certainty in the successful results that will be obtained by employing the Essence in the manner suggested.—[EDITOR.]

—:o:—

CRITICAL REVIEWS.

THERAPEUTICS OF KOLA.

In a paper on this subject read before the Section of Materia Medica and Therapeutics at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, O., Charles C. Yarbrough, M. D., of Detroit, directs attention anew to the thoughtful consideration of what he considers one of the most valuable drugs of our newer materia medica. He believes, that, though this drug has been known to the profession of this country now for nearly twenty years, its medicinal virtues are not well known among general practitioners, and that few of those who use it, fully appreciate its capabilities. Being, as is

now fully established, a general tonic stimulant acting primarily upon the cerebro-spinal centers, it has a wide field of usefulness. Its stimulation is peculiar in that it is tonic in effect and does not leave the secondary depression and "all gone" feeling, which, like the after effects of the ordinary stimulants, is calculated to gradually develop into an irresistible desire for a continuation of the use of the drug. Thus kola is *not* a habit forming drug, a point in its favor of inestimable value.

The physiological action of kola is analogous to that of caffeine, but in, especially, its fresh state differs in that it is more pronounced and prolonged. Just why fresh, undried kola should possess such remarkable advantages over the drug in the dry state, is not clear; but it seems that a rational and plausible explanation is that the caffeine in the former is presented to the system in such a form, dissolved in the natural juices of the drug, that it is readily liberated in a nascent and highly active condition. Whatever may be the true reason therefor, the fact remains that the fresh, undried kola is by far the most effective and preferable. Dr. Le Bon was among the first experimenters to call attention to the superiority of the action of kola in the fresh state, and his assertion, that only the fresh drug is capable of producing the remarkable effects that has rendered kola so notable and so highly prized by the natives of the country whence it comes, has since been verified time and again. The failure of some physicians to get

good results from the use of kola has no doubt been due, in some instances, to the employment of preparations representing the dried drug.

Of the new therapeutic applications of kola, where its success has been particularly noteworthy, is its exhibition in the treatment of that obstinate disease of childhood—pertussis. Blocker reports that he has used it in a large number of cases with surprisingly good results—the attack being cut short and the child's condition rapidly improved. How this kindly action of kola in this disease is effected is not safe to theorize. However, that its influence has been so grateful in a large number of cases, should be an incentive for further trial along this line, to the end that its true value in this disorder becomes established.

Kola is a decided diuretic. It acts more energetically upon some people than it does on others. In my own experience, it has proven to be very prompt and satisfactory as a diuretic—even more so than caffeine and digitalis combined. There are indications that strongly suggest some peculiar direct action on the kidney, although its action is largely indirect, by increasing the blood pressure. Being a reliable diuretic, it is highly serviceable in Bright's disease, cardiac and renal dropsies, rheumatic and rheumatoid conditions, and in all cases where a stimulus to diuresis is indicated, and particularly in those cases characterized by atonic conditions.

As a cardiac tonic, it ranks well with digitalis, and, like the latter

as just stated, causes an increase of urine. Kola, unlike digitalis, does not have a cumulative action; hence it is a good substitute for digitalis and may be used whenever the latter is indicated, or the two may be advantageously combined. Kola is, then, of service in cardiac diseases, in cases of shock with collapse, delirium tremens, etc.

Melancholia is another morbid manifestation which is by no means rare, in which kola gives admirable results. There have been cases, apparently irremedial, that have been entirely cured by the timely use of kola. The value of kola in this disease is gradually becoming more widely and better known, and, as a result, it is now used in nearly all, if not all, of the leading institutions for the treatment of mental diseases.

In alcoholism and morphinism, two deplorable conditions, the effects of kola as a stimulant and supportive are of great service in sustaining the system against shock from gradually reducing or interdicting entirely the use of alcohol or morphine, respectively. It is true, the cure of these habits depends largely upon moral suasion and a determination on the part of the victim to rid himself of his vice; but, withal, a stimulant whose effects will replace those of the irresistible habit drug, without itself producing a depressed and vitiated condition of the system, is of immense value in tiding the individual through the ordeal of breaking away from the influences to which his system is so accustomed.

Kola is of value in combating and preventing surgical shock. Administered immediately before and after a surgical operation, its power of conserving strength and exerting a tonic influence upon the nervous system, will certainly render the patient less liable to collapse. It has been used by some of our leading surgeons for this purpose, and invariably with success.

Uterine inertia, when due to nervous exhaustion, or occurring in weakly, debilitated women, has been found to be amenable to the action of kola. Kola is also useful in normal parturition to sustain the strength of the patient and stimulate the uterus to its best action.

The sustaining, strength conserving power of kola, its characteristic action, makes it then of great importance as a therapeutic agent. It renders it peculiarly applicable to all those conditions where fatigue and exhaustion are imminent. Many physicians take advantage of this property of the drug to sustain them through extra and long continued work, and especially if their duties call for loss of sleep. Given in the form of the wine (Vino-Kolafra), it is something more than even what is commonly understood by a tonic or a stimulant. It is not a whip or spur to exhausted nature (as alcohol is), but a true life-giver. It confers genuine and solid strength and does *not* draw upon nature's reserves.

The usual quantity taken by an adult is from one-half to one wine-glassful, preferably at meal times.

It is very agreeable to the stomach, but its palatability may be enhanced by the addition of a little effervescing mineral water or hot water and sugar. For children the dose is from one-half teaspoonful upward, always well diluted with water.

THE STUDY OF VEGETABLE FERMENTS.

The wide distribution of ferments throughout the vegetable and animal kingdoms—the important part they play in all growth and development, from the germ to the matured life,—is well illustrated by the following observations which appeared in a recent editorial of the *Journal of the American Medical Association* (Dec. 14, 1901):

"When the freshly drawn juices of certain plants are allowed to stand for a short time exposed to air, their color turns to an intense black. Bertrand found a few years ago that this change in color is due to the action of an oxidizing ferment, laccase, upon a substance that is oxidized with great readiness, laccol, and which is chemically a member of the aromatic series. Laccase has since been shown capable of oxidizing many other aromatic substances. Similar oxidizing ferments seem to be present in many and varied forms of plants, among them the mushrooms. In mushrooms Bertrand found besides a ferment resembling laccase, one whose oxidizing power was limited to a specific action on tyrosin, and therefore called tyrosinase. Beet roots and the dahlia also contain tyrosinase.

Otto v. Fürth and Hugo Schneider (Beiträge z. Chem. Physiol. u. Pathol. 1901, i., 229) have recently investigated the occurrence of tyrosinase in the animal kingdom, and the relation it bears to the production of melanin. It was found to be a regular ingredient of the hemolymph of insects, and probably explains the darkening of the juices of such animals when exposed

to air. In the blood of certain crayfish a similar but less active ferment was found. Most interesting was the observation that the lining membrane of the ink sacks from which the cephalopods throw out their inky secretion, is able to produce a black color when placed in a solution of tyrosin. A chemical study of the black pigment obtained by allowing tyrosinase to act upon a solution of pure tyrosin, showed it to correspond in many respects to the ordinary melanins. Most important in the eyes of these investigators is the fact that the ratio of the carbon, hydrogen and nitrogen in this artificial pigment is the same as the ratio of the same elements in the groups of pigments usually considered as melanins, including the black pigment of hair, skin, choroid and melanotic tumors, the sepia pigment of cuttlefish, and also the artificial pigments produced by decomposition of proteids. They suggest that tyrosinase is present wherever pigments are found in tissues, and that the pigments are produced by action of this ferment on tyrosin. They account for the presence of tyrosin by the observation of Salkowski that tyrosin is one of the products of the self-digestion of tissues. Hence, in the production of melanin a double ferment process may occur; by an autolytic ferment an aromatic substance is derived from proteid, and this substance is converted by the tyrosinase into melanin."

"The entire subject of pigment formation," says the author of the above, "still remains so obscure that these observations are of greatest interest; and that so resistant and unalterable a substance as melanin can be produced by a ferment is in itself striking. In addition, it illustrates the wide possibilities of the newly reopened study of enzymes and their activities."

Of still greater interest is the fact, partially demonstrated by A. Fernach and Henri Pottevin (*Pharm. Jour.*, No. 1594, p. 28), that certain fungi, such as *aspergillus niger* and *pencillium glaucum*, can be made to secrete enzymes

varying in character, in accordance with the food constituents given them. Thus, Fernach and Pottevin found that the above species of fungi, when cultivated in a modified Rawlins' solution in which tannin is substituted for sugar as the nutrient agent, yield a zymase which converts tannin into gallic acid.

Extending the experiments of Fernach and Pottevin, the American Ferment Company has discovered that the same fungi secrete varying amounts of proteolytic or amylolytic ferments, according to whether proteids or starches are made to predominate in their culture mediums, which goes to prove our oft repeated claims that the peculiar characteristics of ferments is largely a matter *determined by the environments surrounding their production.*

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SELECTED ARTICLES.

THE DIETARY OF TYPHOID PATIENTS.

BY P. J. BYRNE, M. D.

(Reprinted from the *New York Lancet*, November, 1901.)

The dietary of typhoid patients is at present in a state of revolution, and undoubtedly the new movement is in the right direction. Up to quite recently the usual custom was to keep the sufferer on a milk diet, with beef tea occasionally when the condition of the bowels permitted, until the temperature became normal. Patients thus treated may convalesce favorably, particularly where the dis-

ease runs a rapid course, but when prolonged the result is far from satisfactory. It is a well-known fact that many persons in good health cannot digest milk, though solid food, such as fish, fowl and farinaceous stuffs may be digested with comfort, and it is only rational to suppose that this peculiarity is exaggerated during the febrile state.

I have frequently noticed—and particularly amongst the working classes, where the craving for food on the part of the patients has been surreptitiously satisfied by anxious friends—that in many instances beneficial instead of injurious results followed; increase of weight and tendency to rest being distinctly marked, and the convalescent period being considerably shortened; the patients often being able to return to their work in an amazingly short time.

It is generally admitted when the tongue is dry and the temperature high, that milk and beef tea, better still predigested, are indicated; but when the tongue is moist, and the patient complains of feeling hungry, malted preparations, followed, as the digestion improves, by light farinaceous food, such as arrowroot, corn flour, rice puddings, with a little sugar added easily digested; fish (such as sole), fowl, and occasionally part or whole of a lightly boiled egg, may be given with advantage; the digestive powers of each individual being of course carefully noted. In cases where the patient is much wasted, and diarrhea not troublesome, half to a tablespoonful of fresh cream,

diluted with water, frequently repeated, is highly beneficial. The absence of vegetables from the diet in protracted cases has, to my mind, accounted directly for fatal results in at least four instances which came under my observation.

These cases were kept on a rigid diet, and in each instance the temperature had almost fallen to normal, and the special symptoms of the disease abated, when spongy gums, petechiæ, great prostration, with frequent passing of small quantities of alkaline urine, preceded death. I have no doubt that many other cases of long duration would have ended similarly, had not a more liberal diet been allowed. As vegetables are necessary to maintain health under ordinary circumstances, it is obvious that in some form they must be supplied during protracted disease; otherwise, if scurvy does not actually appear, I think it may at least be inferred that the recuperative power of the blood will be deficient, owing to the lack of vegetable salts. To combat this condition, especially in prolonged cases, half to a teaspoonful of orange juice in a small quantity of sweetened water should be given occasionally, and will always be gratefully received by the patient. Vegetables, such as onions, carrots, etc., may be stewed with meat in the preparation of soups; by this means, some of the anti-scorbutic constituents are extracted, besides giving the patient the benefit of change and variety in taste.

I have adopted this present system of dietary during the past

four years, and have every reason to be satisfied with the results.

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RECITAL OF CASES.

[N. B.—In submitting the following, we would state that in Dr. Pemberton's original report, abstracts of fifty cases in all are given,—the patients treated ranging in age from a two weeks' infant to the child of two years. Owing to limited space, however, we have been obliged to omit here the greater number of these cases, and have selected ten which represent as nearly as possible the character of the whole; i. e., the type of disorder, the method of treatment, and results obtained in each instance. Fortunately the conditions for treatment were similar in the majority of cases, and the histories so nearly alike, that, in making these few selections, we feel that we have been enabled to convey a fairly correct idea of the nature of the author's investigations.—EDITOR.]

FIFTY INFANTS TREATED WITH CAROID.

BY RUSSELL PEMBERTON, M. D.,

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(Reprinted from the *Monthly Cyclopadia of Practical Medicine*, Phila., Jan., 1902.)

In order to ascertain the therapeutic value of a vegetable digestant in various disturbances of the alimentary tract in children, a series of unselected cases was followed. Though some of these were met with in private practice, the majority were dispensary patients, with whom the assurance of having instructions well carried out is unfortunately always small, and in whom general neglect and

ignorance of hygienic principles do much to give disease a harsher power than it would otherwise possess.

These cases are altogether unselected; and are as briefly reported as is compatible with the conclusions hereinafter to be stated. In not a few of them many of the symptoms as originally given in my notes, have been omitted, either because such symptoms had no immediate bearing on the conduct of the case, or else are patently suggested by other cases in the same group. In some others, certain symptoms that may at first seem to have little excuse for obtruding themselves in this report, are retained—largely because these are here and there deemed of value in affording side-lights on general nutrition of the individual under observation, and, now and then, as pointing out under what particular difficulties an artificial aid to digestion has labored.

I used Caroid exclusively. It is put up in several different forms by the American Ferment Company, of Jersey City. There was no intent to make an exhaustive study of the relative values of different preparations of the Carica Papaya plant. It would at best have given only a "mixed result." Caroid was chosen because I had previously used it, knew personally more about it—how to handle it, etc.—and was not so familiar with the other products.

No diagnoses are given. Yet the reader is in every instance offered data enabling him fairly to estimate the conditions of the di-

gestive apparatus. For analytical purposes it has been thought better to list cases according to age rather than illogically to follow their sequence in time:

CASE I. Two weeks. Child in fair condition. Has never had anything but breast milk. Mother reports that during last five days the stools have been green, frequent, and during the last two days have contained curds. Occasional vomiting immediately after nursing. Mother, a large healthy woman, with abundance of milk.

Treatment: Calomel gr. 1-40 every half-hour for ten doses, during which time child was to have no food. After that, the breast every two hours.

Next day the mother reported that the bowels had moved freely, the fecal matter consisting largely of curds. A tenth of a grain of calomel was ordered each night, and half a grain of Caroid with one grain of milk-sugar after each feeding.

Case progressed nicely; a week later had gained decidedly. Thirty-six hours after first doses of Caroid the curds disappeared from the stools and did not re-appear. Advised keeping up the powders for a week longer; taking one after every second nursing, and omitting the bed-time tablet. At age of two months child still doing nicely.

CASE IV. Six weeks. Child in bad condition. Bottle-fed according to physician's directions. Has always been troubled with vomiting, which is now getting worse. Several medicines (character not known) have been tried; also var-

ious prepared foods. The latter have been retained better than milk-combinations, but child is not thriving. Mother careful to keep baby quiet after feeding, but this is not always effective.

The milk formula already in use was correct, and no change was made in this. Powders containing gr. ij of bismuth subnitrate and gr. 1-20 of calomel were to be given fifteen minutes before each feeding, and half a grain of Caroid after each feeding.

Two days later: powders had been effective at first, but nothing has been retained to-day. One-grain powders of Caroid were ordered to be dissolved in water and mixed with the milk at the proper temperature, and the resultant curd broken up thoroughly before being diluted for feeding.

Two days later: at first there was some difficulty in getting the child to take the milk, but he did so finally, and retained the very first feeding given. One or two subsequent ones were vomited, though prepared in the same manner. General condition is better.

One week later: results very favorable, but only if Caroid is mixed in before feeding. Attempts to give milk and lime-water alone, repeatedly caused vomiting.

Same treatment was continued for another week. Child by this time had so much improved, that gr. ss powders were used after each feeding; and gradually these were discontinued. The baby is in excellent condition at this present writing.

CASE X. Nine weeks. Child in poor condition, weak and emaci-

ated. - Bottle-fed. Bowels had not moved for two days; previous movements had been watery and slimy. The history was that of almost continuous vomiting for the last three weeks. Various baby-foods had been tried, and with the same result—they came up almost immediately.

Two-grain powders of Caroid were prescribed and the mother was directed to use each powder in a single feeding of milk, allowing the milk to "set," and then stirring it until again sufficiently liquid to be drawn through the rubber nipple. An initial dose of castor oil was given. This plan was only partially successful. The vomiting continued, though in less degree. The mother said that every second or third feeding was certain to be rejected—brought with her a specimen of the vomit. As this was strongly acid, lime-water was substituted for all the boiled water in the formula, and the predigestion by Caroid continued. This stopped the vomiting. The baby commenced to improve almost immediately, gaining flesh and strength. As an adjuvant, R. and S., in doses of gtt. xx, were given at bed-time for a week, and omitted after the bowels had become regular.

CASE XIII. Three months. Condition only fair. This was a case of marked vomiting, presenting the following history: The child had been given nothing but the bottle, with a mixture of one-third milk, one-third cream, and one-third water, with some lime-water, as ordered by the physician that attended the mother in confine-

ment. The child had thriven on this more or less well until a week previous, though always subject to easy emesis. During this week he had vomited frequently, the ejecta being curdy and sour-smelling. The stools had been infrequent until three days ago; now they have been averaging five or six during the twenty-four hours.

Tablet-triturations of calomel, gr. $\frac{1}{10}$, were ordered for eight doses, and the milk mixture left unchanged, except that the milk and cream were to be added together first, two grains of Caroid then dissolved in water and stirred in until the curds were sufficiently broken up.

After the second day the vomiting gradually ceased. The bowels having become somewhat sluggish after the calomel's effects had worn off, 3 ss of Mist. Rhei et Sod. was ordered each night. The feeding was continued as at first.

Two weeks later the child was in better condition; but seemingly not getting enough nourishment. The milk was doubled, the other ingredients remaining the same.

This diet was satisfactory. Ten days later the little fellow was in excellent condition. The intervals of feeding were lengthened, and the amount again increased. The case has progressed favorably, and without further incident.

CASE XXVII. Six months. Breast-fed exclusively. Condition fair but child quite thin. Mother thought nothing of this as two previous children had been the same way. She wanted some medicine to prevent the curds that were passed

from time to time. Child was also constipated.

Thirty powders, consisting of gr. j each of Caroid and Soda were prescribed, one to be taken three times a day. Mother was told to give half a teaspoonful of castor oil at night whenever the bowels had not moved during the day; and she was asked to return when the medicine had been all used. As the case was so plainly one of simple indigestion, and particularly valuable for clinical observation, I wished to make certain of its return, and suggested that possibly at that time some change in the powders might be advisable. In ten days she was back. Only one dose of oil had been used. She said the child was all right now, but she would like to get some more powders, as she thought they were making the baby a little fatter. The prescription was renewed and the child was still doing well and gaining flesh when last seen—three weeks later.

CASE XXIX. Seven months. General condition only fair. Breast-fed, but at irregular intervals; i. e., whenever he cried during the day, and occasionally as often as six times during the night. Bowels not regular, diarrhea and constipation alternating. For this a patent baby-medicine had been used, and had been effective. Yet nothing controlled the vomiting.

Regularity in nursing was insisted on; the medicine already used was not countermanded; small doses of calomel were ordered four times a day.

Two days later: child no better, still vomiting and very flatulent.

Mother wished to know whether it could not be weaned. I strongly urged against that, offering this as a compromise: She was to nurse him faithfully and regularly for a week longer, and after each nursing give him one of the Caroid powders. If he were then still vomiting more than was usual with nurslings, I would advise the bottle, and direct her how to prepare the milk.

At the end of that time she returned, saying that baby had gradually improved, and had vomited twice only during the last two days. She was so pleased that she now found the regularity of hours less irksome, and promised she would continue to nurse the baby, but would like to have some more of the powders. At present the child is thriving.

CASE XXX. Seven months. Child poorly nourished, anemic. Has been under treatment for some time for obstinate vomiting. During past week has been able to retain very little of the food given. Bottle-fed for several months. Stools infrequent, small and slimy.

Directions: four ounces every two and a half hours of a mixture containing five parts milk, two parts cream, one part lime-water, two parts boiled water. Half a grain of Caroid after each feeding.

Two days later child was still vomiting. Small doses of calomel were then used, but without noticeable effect on the vomiting. Bicarbonate of soda was tried fifteen minutes before each feeding, and helped somewhat, though the result was not entirely satisfactory. At this stage partial predigestion

was resorted to. A grain and a half of Caroid was mixed with the cream and milk ten minutes before these were given. This did so well that it was continued for four days. A half-grain after feeding was then returned to, with the result of occasional vomiting that gradually ceased and did not recur when the quantity of food was increased to normal.

CASE XXXII. Eight months. Child in poor condition, emaciated and anemic. Bottle-fed since birth. Has gained little in weight during the last two months, and has lost in strength. Repeated vomiting, which has lately become worse. Many medicines have been tried, and have now and then been of service, but their effect has never been permanent. Many changes also made in composition of milk given. Barley water and rice water not vomited, but do not seem to nourish child. Bowels generally constipated; have now and then been loose, greenish, with hard curds, and very offensive. No fever when brought to dispensary, but said to have been feverish two nights before.

Bicarbonate of soda, gr. j, with calomel, gr. $\frac{1}{10}$, ordered every three hours. Fifteen minutes after each of these doses, food to be given. The combination ordinarily suitable for the age of six months was selected, but double the usual quantity of lime water was used, and each feeding was followed by gr. ss of Caroid.

Two days later mother said child was no better. The vomiting had been but slightly controlled, and the diarrhea was worse than be-

fore. As the welfare of the child depended so much on her giving it proper attention, and persisting in the treatment, she was told that improvement could hardly be expected in two days in a child that had been loosing ground for two months. As the child had been sufficiently purged, and the anti-emetic power of the calomel had not shown itself, this was omitted in renewing the powders. Otherwise, treatment was as before.

Two days later: child somewhat brighter. Had slept more, and vomited less. Treatment the same.

Three days later: decidedly better. Vomited only twice on Sunday (the day before).

Four days later: marked improvement. Mother finally convinced that child may get well. On one day only have bowels moved as often as three times. Soda powders ordered every six hours instead of every three hours. Caroid continued as before. Two ounces more of milk given in each feeding.

Three days later: Bowels reported a little loose, but without curds—none seen in the napkin brought for examination. Has vomited so little that soda powders were discontinued.

One week later: Child gaining flesh, and apparently well, except for slight flatulence. Tablets of Caroid and Charcoal (containing also gr. iss of boric acid) ordered to be given crushed and in water t. i. d. for a week. Next week the case was dismissed.

CASE XLV. Fifteen months. Fair condition. Breast-fed; also other things. Has had numerous at-

tacks of colic, generally accompanied by some fever, and always followed by prostration, which may be partly due to paregoric and other household medication received at these times. Last attack two days ago. Child better now, but quite flatulent. Tongue heavily coated; no fever.

Six tablet-triturates of calomel, gr. $\frac{1}{10}$, ordered at intervals of one hour this afternoon, and the same for the next day. Breast milk so small in amount, that it was discontinued, and nothing but equal parts of milk and lime-water allowed during the next two days, each feeding being followed by a tablet of Caroid and Charcoal.

Three days later: Tongue more nearly clean, hardly any flatulence. Stools blackish, but otherwise good. Child hungry most of the time. A more liberal diet was allowed, and directions given for increasing amount of food gradually. Tablets ordered three times a day, and a teaspoonful of castor oil directed to be given at night in case constipation occurred.

This case has been under observation for more than a month and a half, during the last two weeks of which no tablets were used. Child now well.

CASE XLVII. Sixteen months. Child's condition very poor; ill-nourished, puny, anemic, and with many furuncles. Has always been somewhat constipated, though occasional attacks of diarrhea have occurred. Bottle-fed since she was six months of age. Has recently had a mixed diet including bread, butter, gravy, mashed potatoes, weak tea, etc. Treated in another

dispensary for past two weeks, but is said to be getting worse. Tongue swollen and red, with several ulcers. Gums red, swollen and tender. Temperature in rectum, $100\frac{1}{2}$.

In addition to local treatment of furuncles, and frequent boric acid and potassium chlorate washes for mouth, milk with lime-water was given, alternating with soluble beef. Essence of Caroid, 3 ss, was to follow each three-hour feeding.

Child was so much better when seen three days later, that a somewhat larger amount of food was allowed, and the dose of Caroid Essence diminished to twenty drops.

Two days later half-grain powders of Caroid were substituted, and milk and lime-water given in double the quantity previously allowed. Mouth better, bowels fair, boils much less numerous.

A week later: Child allowed milk, small quantities of dry mashed potato, and toast. A tablet of Caroid and Soda given three times a day instead of powders. The next week improvement was continued, and with injunctions to mother regarding diet, and use of the tablets again when the first symptoms of indigestion might appear, the case was dismissed.

The following conclusions may be noted. They are not exhaustive and are not intended to be so; but they are presented with the purpose of calling particular attention to certain points based mainly on the preceding cases:

1. Upon the casein of milk Caroid evidently produces a disintegrative or rennet-like action. Indigestible

curds are rendered soft and flocculent, and are thus presented in a condition more ready for absorption. In this way hard coagula are avoided, which otherwise, may be carried into the intestinal tract to irritate and cause digestive disturbances.

2. Clinically, this digestant is stronger when used in conjunction with raw milk, than with milk that has been heated. When the heat has been sufficiently high and sufficiently long to furnish *sterilized* milk, the digestive power of Caroid becomes relatively weak, though less weak than that of any other digestant with which I am acquainted. When the milk is merely *pasteurized* (moderately heated), the digestive power is still somewhat impaired as is the case with all other artificial aids to digestion, but not so much as when the temperature has been brought near to 100°C. Other things equal, then, a child of less than two years will do better on raw top-milk, provided it be pure, and suitably modified with boiled water, lime-water and sugar. The essential is the *purity*. In no case, however, should a raw milk be preferred unless the physician can satisfy himself that a good fresh milk will be used. When conditions are such that pure milk cannot, or will not be procured, moderate heating is safer, in which case the feedings should be followed by somewhat larger amounts of the digestant—from 50% to 100% more.

3. Even under adverse circumstances, a good digestant may act as a corrective either of constipation or of diarrhœa. The consti-

pation appears to be relieved because in the majority of instances infantile constipation is due either to weakened peristalsis incident to nutrition and strength being below par, or to undigested materials blocking the lower bowel. Both of these conditions Caroid, when rationally applied, can relieve. The diarrhea is probably checked in one of three ways: By preventing further attacks of constipation that would subsequently bring about a diarrhea; by softening or digesting curds that would act as irritants; by germicidal action, whether this be indirect in the sense referred to below, or direct.

4. This digestant has unquestionably an antiseptic character. Whether this be direct, causing disintegration of germ-protoplasm and consequent germ-death; or whether it be indirect, removing from the contents of the alimentary canal those elements needful for luxuriant germ-proliferation—these are questions that can be answered only by bacteriological methods. The clinical fact is what here concerns us.

5. It is sound practice to combine whatever vegetable digestant may be selected, with suitable doses of one of the mercurial salts, or salol, or other intestinal antiseptic and antifermentative. In average cases calomel or boric acid serves well. In milder cases an alkali is all that is needed. Yet it is a difficult matter to decide from a single observation of a case just what degree of intestinal antiseptis is absolutely demanded, and one has constantly to keep in mind that the amount of infection is

often disproportionate to the clinical appearance.

6. In all intestinal troubles due to pathogenic organisms, the indication is to afford a weakening system the greatest amount of nourishment compatible with the least amount of nourishment offered to the micro-organisms for their own consumption. What is desired is not so much a food different in its constituents from the proximate principles of milk, but rather one that will furnish these, and yet not tarry long in the canal while awaiting digestion and absorption, thereby providing the lower forms of life with material for sustenance, and for propagation of their species. The intact and healthy mucous membrane is almost a perfect bar to most of the lower organisms. In disease this gate of entrance to the general system is less tightly closed. Yet even then these lower organisms never pass it with a facility equal to that of their own elaborated toxins or that of the final chemical forms of proteid.

We may therefore fairly assume that the nocuous bacteria, always present in the canal despite our calomel and our many intestinal antiseptics, will be nourished by the ingested food directly in proportion to the length of time it remains at their disposal. The sooner we bring about its entrance into lacteals or portal vessels, the sooner we deprive the enemy of his supplies.

7. In doses of gr. ss after feeding, irrespective of age, and also irrespective (within reasonable limits) of the character of the food

given, this vegetable digestant will improve the appetite in children. The result is more marked in those cases in which, from long-continued experience, the child entirely refuses food, or takes it in such limited quantities that even the immediate needs of his system are unprovided for.

8. Certain cases, in which bronchial symptoms were associated with indigestion, proved that the digestant had the incidental property of clearing the upper throat passages and pharynx of the tenacious mucus often so troublesome in very young children, whose expulsive powers are feeble.

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ITEMS AND NOTES.

Treatment of the Hair in Typhoid Fever.—H. M. Little has examined into the results of treatment of the hair under different conditions. Sixty-two patients were seen some months after their recovery and the results to treatment noted. Of these thirty-five had their hair cut while in the hospital, and in only seven was subsequent falling of the hair noted. Of these seven, four were cut late. The ultimate result in all was a thicker growth of hair than ever before. In two cases it was thought to be coarser than before. Twenty-seven patients (fifteen women, twelve men) did not have their hair cut, and the hair fell out in all but three. Ten had to have their hair cut later to prevent baldness, seven being women. In seven other cases, not

cut, in four the hair was very thin, in two the hair was still falling, and in one the hair, curly before, became thin and straight.—*Montreal Medical Journal*.

The Transmitting of Typhoid Bacilli.—Of the various media whereby the bacillus (of typhoid fever) may be conveyed to man, water as of old holds the first place, but the ubiquitous house fly is now known to be a close second. The common house fly (*Musca domestica*), first came prominently into evidence as a carrier of typhoid bacilli during the Spanish-American war. They were then shown to be very active in infecting food and drink where they first had access to undisinfected excreta. They can carry the bacillus in two ways; the fecal matter may adhere to the fly and be mechanically transported; or the fly, having fed on typhoid excreta, may carry the bacillus in his digestive organs, and deposit it with his excrement, the so-called flyspecks.—Dr. H. W. Lewis in *The Carolina Medical Journal*.

How to Read the Tongue.—The perfect tongue is clean, moist, lies loosely in the mouth, is round at the edge, and has no prominent papillæ. The tongue may be furred from local cause or from sympathy with the stomach, intestines or liver. The dry tongue occurs most frequently in fever, and indicates a nervous prostration or depression. White tongue is diagnostic simply of the feverish condition,

with perhaps a sour stomach. When it is moist and yellowish brown, it shows disordered digestion. Dry and brown indicate a low state of the system, *possibly typhoid*. When the tongue is dry and red and smooth, look out for inflammation, gastric or intestinal. Sharp-pointed red tongue will hint of brain irritation or inflammation, and a yellow coating indicates liver derangement. When so much can be gained from an examination of the tongue, how important it is that the youngest child should be taught to put it out so that it can be visible to the uttermost point in the throat.—*Journal Medicine and Surgery*.

Typhoid Fever.—Taylor pleads for treating typhoid by assisting Nature, favoring assimilation, minimizing waste, deflecting the patient's mind from his business, reorganizing the organism and allowing each organ to do its work to its best advantage. He says the best rule is "if you don't know just what to give don't give anything." There is already inflammation of the bowels, and it is unsurgical to use purgatives like calomel. If nausea exist, give the stomach rest until it can digest food; feed three times a day and give just such food as can be perfectly digested, beef tea and beefsteak pulp moderately heated, powdered crackers, raw eggs. Never allow the patient to eat anything that requires mastication, but always have food prepared so that it needs only to be mixed with saliva. The milk diet he condemns, as also the use of

alcoholics. Avoid disturbing the patient during sleep. Allow the patient to drink all the water that is desired. Keep the mouth clean. For restlessness, bromids are effective and leave no bad result. If there is much decomposition in the intestine, he uses saline cathartics and then tincture of iodine and carbolic acid in small doses until they are contra-indicated. Colon irrigation is employed three times a day with warm water. Two typical causes are reported, and he says in the treatment remember the stomach first, the colon next. *Med. News*, Nov. 9, 1901.

The Diazo-Reaction. — From analysis of the diazo-reaction as it occurred or failed to occur in 500 patients and a number of healthy persons, Lampugnani concludes that it is the expression of a pathologic process in the organism, connected with the elevation of the temperature. The temperature may be elevated without the reaction, but the latter never occurs with normal temperature. Besides the elevation of the temperature, which is a necessary but not the unique cause of the phenomenon, there must be some other factor, possibly the production of some reducing substance, the immediate effect of which is the diazo-reaction. The pigments in the urine evidently co-operate in the production of the reaction. It was positive in 31 out of 49 cases of typhoid fever and in 9 out of 26 cases of pulmonary tuberculosis. The tuberculous patients who exhibited the reaction all died soon

afterward. The diazo-reaction has therefore considerable value for the diagnosis of typhoid fever and for the prognosis of tuberculosis. The tests were all negative in nervous, gastric, renal and rheumatic affections, and in acute and chronic intoxications and heart disease, but the reaction was obtained in the 4 cases of malaria examined and in 17 of erysipelas. It never occurred in the healthy subjects, nor in rabbits. — *Giornale Della Accad. di Med.* (Turin), Aug.-Sept., 1901.

Leucocytes in Typhoid. — From a careful study of the blood in forty cases, W. A. Winter concludes that the number of red corpuscles gradually diminishes as the fever progresses, but with convalescence regeneration sets in. The number of leucocytes is diminished in nearly all cases throughout the fever. There is progressive lowering in the percentage of polymorphonuclears, an increase of large mononuclears and lymphocytes, and a decrease in eosinophiles. During convalescence the lymphocytes increase markedly, and the eosinophiles reach or even pass the normal number. — *Dublin Jour. of Med. Sci.*, Oct., 1901.

Mortuary Statistics. — The fifteen principal causes of death, with the rate per 100,000, as made public by the Census Bureau, is as follows: Pneumonia, 191.9; consumption, 191.5; heart disease, 134; diarrheal diseases, 85.1; kid-

ney diseases, 88.7; apoplexy, 66.6; cancer, 60; old age, 54; bronchitis, 48.3; cholera infantum, 47.8; debility, 44.5; inflammation of the brain and meningitis, 41.8; diphtheria, 34.4; *typhoid*, 33.8, and premature birth, 33.7. Death from all the principal diseases shows a decrease since 1890, the most notable being in consumption, which decreased 54.9 per 100,000.

Micro-Organisms in Growing Vegetables.—Growing vegetables absorb the inorganic constituents of the soil and convert them into organic compounds. This process of plant-digestion, of course, takes time, and it follows that until the vegetable cells have been enabled to carry out the transformation, the contents of the vessels retain whatever pathogenic properties the original soil possessed. Along with the inorganic constituents of the soil various micro-organisms find their way into the plant, and repeated bacteriological investigation has proved that certain of these organisms may, and do, retain their virulence. These results are confirmed by a series of experiments recently made public by Wurtz and Bourges who found that typhoid and anthrax bacilli could be recovered in the leaves for three weeks after the inauguration of the experiments. These facts have an important bearing on the importance of cultivating vegetables intended for food as far as possible on a pure soil. This is specially important in respect of vegetables of a kind usually eaten raw grown on sewage farms;

indeed, pending careful observation of the bacteriology of plant-growth under these conditions it would appear desirable to avoid the cultivation thereon of salad plants and of all vegetables to be consumed raw.—*Med. Press and Circular*.

Typhoid Fever at the Royal Victoria Hospital.—Prof. Stewart reports the results of the treatment of 620 cases of typhoid fever occurring during seven years ending December 31, 1900. The mortality for these years was 5.4 per cent.

Of 370 cases the Widal test was positive in all but 8. In 3 of these latter cases the course of the disease was very mild, terminating in the second week. In two instances the reaction was present as early as the third day; in 4 on the fourth day. Out of 96 cases the reaction was positive on the day of discharge in all but 6. In 4 cases after a period of six months the reaction was positive with a dilution of 1:20, and in 7 the reaction was positive with the same dilution after a year; in 6 cases the reaction was positive after two years, and in 2 cases after three years. In 10 cases discharged a year previously reaction was negative. In 4 cases after two years and in 4 cases after three years it was also absent.—*British Medical Journal*, 1901, 1—1403.

An Epidemic.—Typhoid fever is epidemic at Cornishville and Dugansville, Mercer County, Ky.

THERAPEUTIC SUGGESTIONS.**GENERAL DEBILITY.**

BY A. P. REED, M. D.,
NAPLES, MAINE.

This is a condition of the system that many people experience at some period of their lives—a condition arising from a great variety of causes, a condition in which the circulation is at a low ebb, the blood poor in quality, lacking not only iron, but other important ingredients, the muscles flabby, the person being emaciated and pale or sallow, the lips and tongue being perhaps lacking more or less in color. A feeling of depression and lassitude results, with probable shortness of breath on exertion.

While there is no immediate danger from the condition itself, yet it is really a dangerous condition to be in, because one is so predisposed to acquire other affections easily, and if an acute disease gets hold of such a person he has so little "reserve" that he easily succumbs, his bank account, so to speak, having been exhausted, yea, overdrawn.

The treatment of this condition should be broadly instituted paying particular attention to the peculiarities of a given case, at the same time looking after the diet and digestion and building up the blood.

To this end I would suggest the avoidance of over-exertion, the husbanding of strength possessed, (though moderate, well-borne exercise will be beneficial,) and the breathing deeply of the best of air

to secure oxygen for the blood and digestion is an important item. To begin with, milk should be the principal food if it is well borne by the patient. Some of these patients who cannot take milk "straight" will take nicely a mixture of equal parts of cream and hot water with a third of a teaspoonful of saleratus and a teaspoonful of brandy added to each glass prepared.

Eggs not fried are good for these people, while broiled steak and meat broths, vinegar, pickles and pastry are to be avoided. There is no objection, as the patient improves, in allowing some fatty food, as good butter and cream freely taken, if it is handled well, and if the patient has a tendency to be thin.

A good extract of malt may be taken with the meals and at bed-time to advantage. As to medicinal treatment I would prefer the following for a while at least:

Before meals a three-grain powder of Caroid, or a Caroid Tablet; after meals a dessertspoonful of syrup of hypophosphites in two wineglassfuls of water, and one or two laxative Caroid Tablets at bed-time to regulate the bowels.

REMOVAL OF SLOUGHS.

The American Ferment Company.

GENTLEMEN: Your letter of late date now brought into consideration. The test I was making with powdered Caroid was to remove an epithelioma which was too far advanced for medical treatment, and the results were, of course,

nil. But it showed itself able to remove all slough, and since that time I have not had a case of sluggish ulcers upon which to make a trial of it. But I have used it some in cases of indigestion and it has given perfect satisfaction. I intend to use it further in this direction, and also in ulcerations. If you have any recent literature on Caroid, in any of its forms, please send same. Thanking you in advance for the anticipated courtesy, I beg to remain,

Yours truly,

E. M. FOREMAN, M. D.,
Delia, Ky., Feb. 28, 1901.

NOTE: Caroid has recently been used by surgeons for the removal of slough, as follows: Dust the slough with Caroid powder, and cover with a damp compress protected with rubber tissue; or, if preferred, the compress may be saturated with Caroid Solvent.—[EDITOR.]

POWDER STAINS.—TATTOO MARKS.

BY C. H. FISHER, M. D.,
SCRANTON, PA.

(Reprinted from *The Medical Brief*, St. Louis, Mo.)

B. F. S., A. M., M. D., asks for a means of removing powder stains. Let him try the following:

First, render the surface aseptic. Anesthetize with a spray of chloride of ethyl. Cover with Caroid Solvent, and prick in with a number of fine needles, mounted in shoemaker's wax. Dip the needles frequently in the Solvent. Cover with a layer of gauze previously soaked in the Solvent.

Repeat if necessary. Solvent is prepared by American Ferment Co., 81 Steuben St., Jersey City.

This method originated with Dr. A. H. Ohmann-Dumesnil, St. Louis, Mo., who states that success in this operation depends upon the thorough perforation of the cysts enclosing the pigment or carbon. The compress covering the pricked surface should be thoroughly saturated with the Solvent and covered with rubber tissue to prevent evaporation.

The rationale of the operation is that tattoo marks and powder stains are caused by encysted pigment or carbon particles. Caroid acting upon dead tissue only dissolves or digests the encysting envelope and these particles are thus freed and eliminated.

—:O:—

OPINIONS OF OTHER JOURNALS.

[N. B. For the following clippings, see *Medical World* (Phil.), Sept. and Oct., 1901; pp. 396, 397, and 426.—EDITOR.]

DYSPEPSIA WITH FLATULENCE.—Editor *Medical World*: I have a patient 44 years old, light complexion, weighs about 170 pounds, married, and has about nine children. About every two or three weeks he begins to feel numb, his hands feel as if his elbows had been struck, which is a complete dead feeling. He also belches all the time this feeling is on him—that is, he belches every minute or two. He has a feeling as if there is enlargement in the hypochondriac region; as if the colon is distended with gas. He also

sometimes suffers with sudden ulcer. Do you think so? This is an important case and I will be much pleased if you will help me out. *The Medical World*, is a great help to me in my practice. It acts like a sedative and stimulant both at the same time, and will certainly relieve the puzzled mind in hours of distress and suspense, and stimulate us to a full sense of our professional duties.

J. H. PHILLIPS, M. D.,

Milner, Ga.

ANSWER: I think Dr. Phillips would do well to give his flatulent patient a teaspoonful of a saturated solution of sodium phosphate (P., D. & Co.) in half a glass of warm water one-half hour before meals, and use ten grains of Caroid powder after the meals. The sodium phosphate will keep the bowels regulated, and has a special affinity for these cases of flatulency.—[EDITOR, *World*.

ulcer. Do you think so? This is an important case and I will be much pleased if you will help me out. *The Medical World*, is a great help to me in my practice. It acts like a sedative and stimulant both at the same time, and will certainly relieve the puzzled mind in hours of distress and suspense, and stimulate us to a full sense of our professional duties.

J. U. ROACH, M. D.,

La Follette, Tenn.

ANSWER: The condition Dr. Roach has presented (pages 396 and 397), can be handled very nicely by giving his patient the following:

R Argent., nitrat, gr. viij.
Ext. hyoscyami, gr. xx.
Ft. pil. No. xl.

Sig.—One pill half hour before meals.

Then after meals give a ten grain powder of Caroid, or what would be a little better, eight grains of Caroid, two grains of boric acid, and two grains of Charcoal. Your advice as to the laxative is good. I am in the habit of using a tablet of aloin, $\frac{1}{4}$ gr., belladonna, $\frac{1}{4}$ gr., and strychnin, $\frac{1}{16}$ gr. One such to be taken each night. The above, with a properly regulated diet, will soon relieve this patient.

C. E. SCOTT, M. D.,

Goddard, Kan.

—:O:—

POSSIBLE GASTRIC CANCER, OR ULCER.—Editor *Medical World*: Please give diagnosis, treatment and prognosis, for the following case: Mrs. W., aged 70, has been suffering some months with nausea and gastralgia. Very much emaciated. Stomach will not tolerate solid foods. Temperature subnormal. Action from bowels two or three times a day. Tongue dry and furrowed. Appetite ravenous, and especially for certain articles of diet. Patient has been a habitual user of tobacco for years. I think we have a chance here of diagnosing gastric ulcer in its early stages. There has been no characteristic vomit as yet, but the cadaveric appearance and tenderness in the region of stomach give some grounds for suspecting

ONE ON THE DOCTOR.—“No, I am not a Christian Scientist,” said Kandor.

“But you believe in throwing physic to the dogs,” remarked Dr. Krabbed.

“Not if it happened to be your physic and my dogs.”—*Ex.*

Caroid and Nux Vomica Tablets

For Use In Atonic Dyspepsia.

Having received many requests from physicians for a tablet combining the digestive properties of Caroid with agents that stimulate the motor functions, we have decided that hereafter we will furnish tablets made after the following formula:

R Caroid, gr. $1\frac{1}{2}$.
Ext. Nux Vomica, gr. 1-5.
Pulv. Rhubarb, gr. $\frac{1}{2}$.
Pulv. Ipecac, gr. 1-20.
Pulv. Capsicum, gr. $\frac{1}{4}$.
Sacch. Lac.,
Pulv. Arom., aa q. s.

The above tablets are put up in bottles containing 150 and 500.

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ESSENCE OF CAROID

An elegant, palatable and permanent solution of the vegetable ferments contained in Caroid, and possessing their well known qualities of acting upon all kinds of foods, in acid, alkaline and neutral media. It is therefore

A VALUABLE VEHICLE

when a digestive agent is wanted in combination with other drugs.

A USEFUL ADJUNCT IN INFANT FEEDING

Owing to its remarkable action in digesting the casein of milk (converting the hard curds into assimilable products) Caroid (Powder or Essence) is one of the best correctives of infantile indigestion thus far discovered.

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FERALBOLD

**A Peptonized Albuminate of Iron
as found in the Yolk of an Egg**

The advantage of feralboid is that it is a peptonized albuminate of iron which will keep indefinitely, the dose is small and is capable of any number of different combinations with other drugs.

Feralboid is given only in one-third and two-thirds of a grain and to further protect it, is put up in tablets, 150 in a bottle, as follows:

Feralboid plain, each tablet containing one-third of a grain of the drug.

Feralboid and quinine, each tablet containing one-third of a grain of feralboid and one grain of quinine.

Feralboid, quinine and strychnia, each tablet containing one-third of a grain of feralboid, one grain of quinine and one one-hundredth grain of strychnia sulph.

Feralboid and manganese, each tablet containing one-third of a grain of feralboid and one grain of the sulphate of manganese.

One hundred and fifty of either kind of these tablets will be sent, carriage prepaid to any part of the United States, on receipt of one dollar.

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A Perfect Antiseptic Ointment for Surgical Uses.

Prepared only for the Medical Profession.

Hydrargyri bichloridi, Oleum eucalyptus (Australian), Formalin, Benzo-boracic acid.

A glance at this formula will convince the busy practitioner at once that in lyptol we have a most formidable weapon for combating a wide range of surgical conditions. It must be remembered that it is prepared exclusively for the use of the Medical Profession; in fact, if the manufacturers wanted to do so, a glance at the formula will show that it is too powerful to be used without the direction of the physician. It is put up in large glass jars containing one pound.

If you cannot procure it from your druggist, we will, on receipt of one dollar, send one full pound jar, express paid.

THE ARGOL CO., Chemists, Danbury, Conn., U. S. A.

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℞ Caroid, gr. 1.
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Podophyllin, gr. $\frac{1}{8}$.
Ext. Belladonna, gr. $\frac{1}{16}$.

CHOCOLATE COATED.

Caroid is a corrective of gastric and intestinal irregularities. It is not only a useful aid in checking diarrhœa, but in relieving constipation. Combined with the laxative principles of Cascara Sagrada, Podophyllin, etc., as in "Caroid Laxative Tablets," it produces most excellent results. The fluidity of the bile is augmented, a more generous outflow ensues, and the peristaltic action of the bowels is consequently increased. Caroid Laxative Tablets have been uniformly pronounced by physicians a most desirable combination, for the relief of chronic constipation, especially in women and those who lead a sedentary life.

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JERSEY CITY, N. J.

Indigestion and Disease.

Indigestion is the source of nine-tenths of all the ills that flesh is heir to, and is **never** cured by dieting alone. In fact, introspective attention to all that goes into one's stomach will often produce dyspepsia in short order.



A digestive tract kept clean with **Abbott's Saline Laxative** and free from fermentation with **W-A Intestinal Antiseptics**, if controlled by a nervous system that is *not overwrought and introspective* will take care of what is put into it that is well chewed and deliberately eaten, particularly if the meal is followed each time by a full half hour or more given to pleasure or complete rest.

Our Suggestions.

Clear out now and then with Abbott's Saline Laxative, clean up with the W-A Intestinal Antiseptics, keep happy and count your blessings and you can pretty nearly eat what you please.

• PRICE LIST.

(Postpaid for cash with order or on prescription at leading pharmacies.)

Saline Laxative, per 6-oz. can, 35c.; per dozen, \$4.00; per gross, \$45.00.

W-A Intestinal Antiseptics (tablets), 100, 35c.; 500, \$1.40; 1000, \$2.75.

Samples, literature and complete price-current of alkaloids and other active principles on request.

THE ABBOTT ALKALOIDAL CO.,

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A preparation made from pure malaga wine and absolutely fresh West India kola nuts, by special processes carried on without heat, whereby the full therapeutic value of the nut is secured and permanently retained. An elegant and palatable product.



ITS DISTINGUISHING FEATURES:

A powerful tonic stimulant without harmful reaction or after-effects.

Induces no habit.

Which qualities render it vastly superior to the many tonic wines heretofore employed in medicine.

The use of Vino-Kolafra as a tonic is indicated in anæmias, in chronic affections of a debilitating character and in convalescence from severe ailments.

"In nervous derangements due to digestive disorder, it is greatly aperient and stomachic."—
MONNET.

"As a heart tonic so gratifying are the results that we may say of it that in the last stages of cardiac affections it sometimes works resurrections."—SCHUCHARDT.

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A LAXATIVE SALT OF LITHIA.

INDICATIONS:

Gout, rheumatism, uric acid diathesis, constipation, acute and chronic, hepatic torpor, obesity, Bright's disease, albuminuria of pregnancy, asthma, incontinence of urine, gravel, cystitis, uro-genital disorders, chronic lead poisoning, headache, neuralgia, neurasthenia and lumbago. It is also indicated in all cases where there is a pronounced leaning to corpulency, reducing to a minimum the always present tendency to apoplexy. In malaria because of its wonderful action on the liver increasing two-fold the power of quinine. Hay Fever.

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Home Predigestion of Food Number.

Alimentary Review.

A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

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VOL. I.

JERSEY CITY, N. J., JULY, 1902.

No. 4.

ORIGINAL ESSAY.

HOME PREDIGESTION OF FOOD.

BY CHARLES S. ROTTNER, M. D.,
PHILADELPHIA, PA.

I have been requested to furnish the readers of the REVIEW with a clinical history of the case of Mr. — —, and as it is one entirely out of the ordinary run of such cases, and the treatment itself unique in character, I have consented to do so.

When this patient first came to consult me he stated that he was a "physical wreck"—and, indeed, his appearance did not belie the statement. He thought his troubles were all due to the condition of his stomach, stating that he had a "distressed feeling" therein, with a constant dull pain from the time of taking food until the next meal, but more particularly about one hour after eating. He complained of considerable flatulency,

flushing and puffing of the face, cold extremities and constant headaches. He had frequent bilious attacks accompanied with jaundice and occasional vomiting of bile, but had never noticed any blood in the vomited matter. His bowels were at times constipated, and at other times loose. He had lost 45 pounds in weight within the preceding eight months. He had consulted a number of physicians, and all agreed that he was suffering from a grave gastric disorder. Some pronounced it "ulcer of the stomach," "atonic dyspepsia," "tumor," etc., and others, "a general catarrhal condition of the gastro-intestinal tract."

Upon a thorough examination, I found lungs normal; heart very irritable and weak, with a slight hæmic murmur, but no organic lesion; liver, much enlarged; stomach, tender upon pressure; abdomen, very much distended and

tender upon pressure. Upon examination of urine, found it loaded with urates and uric acid and oxalates; no albumen nor sugar. Diagnosed the case as gastro-intestinal catarrh. The patient, who is a chemist, stated clearly what had been done for him by the different physicians whom he had employed, and told me there were few drugs in the pharmacopœia (that were supposed to be of service in stomach troubles) that he had not already taken. In fact, he thought, and I agreed with him, that he had taken entirely "too much medicine." I put him on the following treatment, viz.:

I first cleaned out the intestinal tract with the mild chloride of mercury and bicarbonate of soda, followed by castor oil. I then cautioned my patient as to what foods he should eat, and prescribed bismuth, pepsin and nux vomica, in connection with creosote to arrest fermentation. However, I soon found that such treatment was not of much avail. My patient complained, that, so long as any food remained in the intestinal tract, it caused constant and most distressing pain. Moreover, I tried the different digestive ferments, but found that, until digestion was quite complete, the pain endured; consequently, I resolved upon a different course of treatment.

What I wished to accomplish was to prepare a predigested food

that would be quite equivalent to a regular meal. I knew well that none of the various liquid foods in the market could take the place of regular diet for any period of time, and yet it was necessary that my patient's stomach be given a rest and that nourishment be sustained. To overcome any diseased condition, bodily strength is necessary, and it was my purpose to supply this strength; which I did. How nourishing the albumen of meat fibre is! Yet my patient had been able to swallow only the juice of the meat. The fibre irritated and pained, no matter how well it was cooked. I wished my patient to have three ounces of meat at his noon-day meal.

Did any of my brothers in the profession ever try to digest meat with pepsin? This process I found to be most tedious and unsatisfactory. Pepsin is impeded by the products of its own action and requires more liquid than it suited my purpose to use. Then, too, a certain temperature must be maintained. Again, frequent agitation is necessary and almost constant attention is required. I therefore turned the work over to a nurse, but she seldom was successful. I then tried Caroid, and was pleased to find that cooked and ground meat was completely reduced to a pulp in less than an hour's time. Moreover, temperature did not

seem to be of any consideration. My patient would, of course, Curiously, I investigated, and have soon tired of this one mixture. But eggs, fish, oysters, etc., found that the Caroid ferment acted in a temperature varying from 68° F. to 185° F. I was not a little surprised to find that meat was digested at ordinary living-room temperature. Consequently, the most inexperienced person could prepare, with the use of Caroid, the meat which I was so anxious my patient should have.

It may be of interest for me to briefly outline how this meat was rendered palatable and served.—A suitable quantity of rice was first thoroughly cooked and mashed through a colander. A few grains of diastase were then added to the prepared rice, and it was kept at a temperature of about 120° F. until it became of a thin consistency and had acquired a sweet taste. The next step was to add the meat and stir it in with the rice. The mixture was then heated to a temperature such as that at which soup is usually eaten, and a small amount of cream added to make the food more palatable as well as more nutritive. (The digestion and ultimate assimilation of the cream is also aided by the Caroid, which was introduced with the meat.) In such a mixture, all of the unpleasant bitterness of the meat, which is a natural result of the digestion of proteids, is disguised.

After a three months' diet of this predigested food, I believed that my patient's stomach should be strong enough to retain ordinary foods until they were digested,—i. e., with the aid of digestive ferments—and such proved to be the case. By these experiments, in predigesting food, an important fact (which is often overlooked by the practicing profession), had been impressed on my mind; viz.: Pepsin refuses to act unless the temperature is sufficiently high. In cases of atony of the stomach, the temperature is often much below the normal. This was so with my patient, and pepsin proved a worthless drug; whereas, Caroid, with its peculiar property of acting at any ordinary temperature aided the worn-out stomach in performing its natural function. *Aid*, in such an instance, not stimulation, is what the worn-out stomach needs; stimulation is unnatural and only increases the evil.

A few more months, a little care and intelligent treatment were all that was necessary to make my patient a well man. In short, this proved to be one of the most interesting and instructive cases that has ever occurred in my practice.

—:o:—

EDITORIALS.

DR. ROTTNER'S CASE.

We believe that the case we have published here, submitted by Dr. Rottner, opens up a new and wide field for investigation in the matter of predigested foods, which cannot but prove of especial interest to every practitioner of medicine. The physician in his daily rounds constantly meets with "worn-out" stomachs requiring rest or recuperation; and if this latter requisite can be so simply obtained in the manner here recommended—i. e., by furnishing predigested nutriment freshly prepared—a therapeutic means has been put within our reach, whose effectiveness and practical utility can hardly be overestimated.

One important advantage, in the home preparation of such foods, is the fact that it insures *freshness* of material. This is a matter of vast importance, as it is utterly impossible to so preserve any food, especially albuminous food, that it will retain all the con-

stituents of fresh material. The shortcomings of the best preserved foods have been shown by the untoward experiences recorded of Polar expeditions, sailors on long voyages, marching armies, etc. Already, pediatricists have discarded the use of preserved milk foods in their practice. The necessity of furnishing fresh, raw material has been recognized, in order to prevent such disorders as scurvy, rachitis, etc.

Again, it is probable that bankrupt stomachs attain various degrees of insolvency and require different methods of treatment. To reduce proteids completely to peptone, or starches to sugar, is probably more than is needed in many cases. The stomach should only have that degree of aid that will enable it to help itself. With the aid of Caroid and a good preparation of diastase, (such as "Bana-Diastase," prepared by the American Ferment Company and having a starch-converting power of two hundred times its own weight), the preparation of predigested food need not be much more troublesome nor more expensive than the preparation of any other food for invalids. Such foods will certainly be vastly cheaper than the proprietary preserved foods.

We do not wish to infer that Caroid alone, taken by the mouth, will not effect the object aimed at

in the majority of instances. It is in the extreme cases, where the stomach needs a greater rest than can be afforded by artificial digestive aid, that foods prepared in the manner suggested will prove most beneficial. We believe, however, that the predigested food described by Dr. Rottner will be found an important adjunct in typhoid- and infant-feeding, as well as in the treatment of anæmia and aggravated cases of "chronic indigestion." With these few brief remarks on this subject, we will conclude any further observations at this time, by stating, that, in a later number of the ALIMENTARY REVIEW, we shall be pleased to give more specifically certain working formulæ for the home preparation of a variety of such predigested foods.

THE BANKRUPT STOMACH.

Some one has pertinently said that the first requisite for success in life is to be a first class animal. The author of the above remark evidently wished to emphasize the fact, that vigorous bodily health is essential to any man who hopes to fulfill the highest duty to himself and his environment. When we consider that thought and action are modes of force, which are dependent directly on the application of energy produced by chemical changes that have their origin

in the stomach, we begin to realize that the physical stamina of man, as well as his mental and moral nature, is closely concerned by the character of his foods. To become "a first class animal" one must inform himself as to the composition of foods, the functions of digestion, and the connection of the use of foods and bodily habits with a healthy condition. As one author recently said: "An excellent illustration of the careless ignorance too often shown in the use of foods is afforded by the breeder of fancy stock. This individual informs himself from the best sources of information as to the amounts of the different food materials that will furnish the proper proportions and weights of protein, fats and carbohydrates to keep each animal in a condition to yield the best pecuniary return. At his own table he indulges in those forms of food that are most conveniently obtained, or those most acceptable to his taste with no regard to proportions nor amounts. No thought is given to his own bodily needs until excessive indulgence in some direction culminates in a diseased condition that requires medical advice."—Prof. Maberry in the *Cleveland Medical Gazette*, July, 1901.

Statistics show that more than one-half the income of the people of the United States is spent for food and food accessories; that

five to ten per cent. of the entire food supply is adulterated; and that at least ten per cent. of this adulteration is injurious to health. The craving for food out of season and out of place, has led to the employment of chemical preservatives which are not only directly injurious to the stomach, but which destroy much of the nutritive value of the food itself. The object of the preservative is to prevent putrefaction and decay, but it has been found impossible to do this effectually without material loss of food value and, at the same time, interfering with the activity of the digestive process. Within the last few years a class of proprietary foods has appeared in the market, which includes a cereal preparation for almost every day in the year. These foods are intended to supply the enormous demand which exists for something which will assist jaded appetites already sated by endless variety and bad combinations. In other words, the object is to satisfy the popular craving for something novel—something new for the “bankrupt stomach.” But, as one writer says, “there need be no better commentary on the laziness or wilful ignorance of the American people than to assume that grain can be changed in any form of machine so as to give it a greater food value than was in the original grain.”

The question which the physician has to solve, in the treatment of the “bankrupt stomach,” is how to furnish adequate nutritive material in the form most acceptable in any particular case. If the degree of insolvency is slight, he may recommend easily digested foods and aid the impoverished digestive secretions temporarily, by prescribing with the meal a ferment whose solvent action is exerted upon all such foods until their final absorption into the circulation. This ferment (like Ca-roïd) must act upon all classes of food, and in any media—acid, alkaline or neutral. But in those more extreme cases, as in certain feeble conditions, gastric catarrh, neurasthenia, anæmia, etc., where the stomach is practically “bankrupt” and will tolerate no food which requires digestive work—then predigested food, freshly prepared in the manner suggested on a previous page, is strongly indicated. That a food thus *freshly* prepared, is chemically superior to the various proprietary canned infant—and invalid—foods on the market, will be readily seen by any physician who has clinically experienced the ill-effects resulting from the continued use of *preserved* foods. Again, home preparation insures variety and different degrees of conversion—a fact of considerable importance in treating the various digestive dis-

orders as they occur in actual practice.

PREPARATION OF FOOD.

Every animal is furnished by nature with a mechanical and chemical apparatus, by means of which food material is prepared for absorption into the true interior of the body. Mastication, insalivation, deglutition, peptonization, gastric and intestinal peristalsis, are all parts of a general process by which food constituents are separated from one another and rendered mechanically and chemically fit for acceptance into the circulation. Some of the lower animals possess contrivances for this purpose, that are not needed by man; e. g., chewing the "cud," swallowing sand, gravel, glass, etc., two stomachs, gizzards, etc. In evolving to his present superior rank in the animal kingdom, man has utilized his brains and invented means of preparing his food in a more absorbable form, so that his digestive organs are not called upon to perform the same amount of labor nor utilize the same amount of energy that may be observed by his relatives lower in the scale. His "vital force" is turned to other accounts.

The action of heat has been resorted to (i. e., "cooking"), in order to mechanically subdivide muscular and vegetable fibres, and

thus present proteid tissues to the secretions in a more absorbable (digestible) form. Muscle fibres bound together, as in raw meat, and the tough tissue fibres of vegetables, are not only disintegrated and softened by the action of heat, but further converted into collagen and gelatine which are more easily dissolved by the ferments. Starch granules are exploded by dry heat, and their contents converted into dextrose, etc., for which reason potatoes when baked are more digestible than when boiled. In this way, by furnishing fuel in the most available form, the human machine is kept in operation with the least expenditure of energy for "running" expenses, and a reserve is left for physical and mental effort which none of the lower animals possess.

In disease, (especially in disorders of digestion), this process of "preparing food" may be utilized to a fuller extent. In those cases, in which it is desirable to aid an outraged stomach by furnishing food material in a form requiring little or no digestive effort, we may not only disintegrate fibrous tissues, etc., by the methods of cooking, but we may carry the process still further by exposing the various food substances to the action of a ferment in the manner described by Dr. Rottner. By predigesting the food at the

home as he suggests, *aid* is given to the worn-out stomach, proprietary preserved foods are rendered unnecessary, and the patient is saved much useless expense.

our correspondents has been selected and published here as a type of many others on this point; to wit:

The American Ferment Company.

THE EFFECT OF VARIOUS THERAPEUTIC AGENTS UPON DIGESTION.

The advance made in recent times in the better understanding and treatment of disorders of the gastro-intestinal tract, is due largely to the modern scientific method of determining the actual condition of the stomach contents after the ingestion of a prescribed meal ("Ewald" or "Boas' breakfast"), and observing the effects (inhibitory or otherwise) of certain drugs upon the digestive process. Among investigations along this line, those of Chittenden, Reed, and others, have been of much practical service to the physician in acquainting him with the specific action of certain well-known therapeutic agents upon the gastric secretions. Numerous letters have been received by us of late in relation to this subject in which the writers request information concerning the advisability of prescribing some of the more commonly used antiseptics and antipyretics in conjunction with Caroid in the treatment of the various disorders of alimentation. The following query from one of

Gentlemen: I am interested in a number of questions relating to digestion from a practical standpoint. To be specific, these questions relate to the relative inhibitory effects of certain drugs upon gastric digestion. It is, for instance, ordinarily assumed that saccharine is neutral in the aforesaid respect; but this has not been proven so far as I know, although certain European investigators have looked into the subject. Their conclusions, however, are indefinite, in fact, conflicting.

The subject not only supplies interest in relation to saccharine, but also in relation to many other drugs daily used. I thought it likely that if you knew that my purpose was a scientific and not a commercial one, you might supply me with a small quantity of your Caroid ferment for experimental uses. I am not in general practice, but, as my cards indicate, am a specialist on the eye, ear and throat.

Very truly yours,

E. J. OVEREND, M. D.,

Oakland, Cal., Jan. 30, 1901.
McDonough Block.

The best method of determining the point raised here by Dr. Overend, is to test the stomach contents of an Ewald meal at varying intervals after the administration of the numerous antiseptics and therapeutic agents suspected to inhibit digestion. It is well known, however, that laboratory tests have demonstrated that digestive ferments of animal origin are inhibited by many therapeutic agents under laboratory conditions. For example, antiseptics generally inhibit pepsin action, hence the outcry against the use of antiseptics

in preserved foods (canned meats, "embalmed beef," etc.) Various neutral salts have also been found to have an inhibitive effect upon the action of animal pepsin, especially ammonium sulphate and sodium chloride (common salt), the latter even when present in no greater amount than 0.5 per cent., for which reason, salted meats, fish, etc., prove indigestible when indulged in for too long a time or in too large quantities. Alkaline salts are also prejudicial to a very high degree. Sodium carbonate, in such small proportion as 0.005 per cent., causes an appreciable destruction of the ferment in one or two hours, at body temperature.

In the course of their investigations, Chittenden and Bolton (Cf. *Studies of Laboratory and Physiological Chemistry*; Yale University; Vol. III), found the presence of 0.5 per cent. of antipyrin to greatly retard the action of pepsin while above 3 per cent. completely arrested it. With acetanilid (antifebrin), if above 1.5 per cent., pepsin action was completely stopped. Pancreatin action was arrested with 0.5 per cent. antifebrin, and stopped entirely with 1 per cent.

In connection with the above, it is interesting to contrast these effects of the various agents that inhibit the action of animal ferments, with the effect of the same

agents upon the action of Caroid (vegetable digestive ferment) as shown by the published reports of Prof. R. H. Chittenden, of Yale University, and others. These reports prove conclusively that vegetable proteolytic ferments derived from *Carica Papaya*, the pineapple and other sources are independent of the many hampering influences that affect the action of animal ferments, and that this is especially true of Caroid.

In order to determine the influence of various therapeutic agents and other substances upon the proteolytic action of the *Carica* ferment, Prof. Chittenden has tested its action upon numerous proteids in connection with the following substances, viz:

Carbolic acid	- - - -	0.5 per cent.
" "	- - - -	0.1 "
Acetic acid	- - - -	0.5 "
" "	- - - -	0.1 "
Lactic acid	- - - -	0.5 "
" "	- - - -	0.1 "
Dry human bile	- - - -	0.2 "
Ox bile	- - - -	0.4 "
Quinine	- - - -	0.2 "
Bismuth subnit.	- - - -	0.1 "
Lime water	- - - -	100. "
Salicylic acid	- - - -	0.1 "
" "	- - - -	0.2 "
Corrosive sublimate	- - - -	0.1 (1-1000)
" "	- - - -	0.1 (1-2000)
Chloroform	- - - -	0.4 per cent.
Antipyrin	- - - -	0.1 "
" "	- - - -	0.2 "
" "	- - - -	0.4 "
Acetanilid	- - - -	0.1 "
" "	- - - -	0.2 "
Oil of peppermint	- - - -	0.4 "
Potassium chlorate	- - - -	0.1 "
" "	- - - -	0.2 "
Strychnia sulphate	- - - -	0.5 "
Brucin sulphate	- - - -	0.5 "
Lime water	- - - -	50. "

Boracic acid	- - - -	0.2 per cent.	especially over the laboratory pep-
Sod. chlor. (common salt)		0.1 "	sins and pancreatins of animal
"	"	0.2 "	origin.
"	"	0.4 "	

In this long list, some of the therapeutic agents named, slightly increase and some slightly diminish the action of the ferment; but none of them, in the proportion above given, inhibit its action. Surprising results were obtained in some of the experiments. For instance, salicylic acid (0.2 per cent.) was found to increase the activity of the ferment 10 per cent. Corrosive sublimate, 1-2000, produced a similar increase. Chloroform (0.4 per cent.) diminished the action only 5 per cent. Acetanilid (0.1 per cent.) increased the activity of the ferment slightly, while 0.2 per cent. acetanilid showed a decrease of only 4 per cent. The action of the ferment with potassium chlorate, strychnia sulphate, brucin sulphate and lime water in the proportion above named, produced practically no difference in the enzymotic activity of the ferment. Boracic acid (0.2 per cent.) increased its activity 5 per cent.

From a consideration of the foregoing facts, it may be safely concluded that no drug which the stomach will tolerate, is likely to interfere with the action of Caroid; hence its value in the therapy of digestion. The above makes plain, too, some of the practical advantages it has over other ferments—

YES; IT IS "STRANGE!"

If we may judge from the character of the numerous articles and editorials, which have appeared of late in the various medical journals of this country, concerning the prevalence of "substitution," this evil would seem to be rapidly growing into a crime which should be made punishable by legal enactment. It is gratifying to note that the legislature of one state, (Tennessee), has recognized the necessity of restricting this vile practice and of protecting the health and lives of the people of her commonwealth, by placing upon the statute books an act which covers this offense. "Substitution" is still permitted to thrive, however, in other states of the union, and, like any other infectious disorder, it is likely to manifest itself in various hybrid forms. The plea usually made by the offenders, that the substitute is as "good" as the original, and "cheaper," is one which may serve as a symptom by which to diagnose the real condition of affairs, and should always be regarded with distrust.

But it is not the physician alone whose reputation is often made to suffer from the effects of the evil

we are considering: the manufacturing chemist has also been made the victim. As an illustration of the tendency in these modern days of stern competition, for the true commercial instinct to become perverted when unrestrained, we publish the following letter which was recently received by the American Ferment Company from one of their correspondents, who, very naturally, requests an explanation; to wit:

"Gentlemen: I have been offered by a traveling salesman, representing a tablet manufacturer, tablets (purporting to contain Caroid and to be the same as the "Caroid and Charcoal Tablets" prepared by you) in bottles of 500, for \$1.80, which price is considerably lower than yours for the same number of tablets. It seems strange to me that other manufacturers should offer your products at a price lower than that charged by yourselves. If you will kindly explain the above, you will greatly oblige.

Yours respectfully,

G. A. GILBERT, M. D.,

Danbury, Conn., Feb. 1, 1902."

In view of the following facts, we are not surprised to learn that Dr. Gilbert thinks the offer he refers to "strange." Our Caroid and Charcoal Tablet formula is as follows:

R Caroid,
Charcoal,
Boric acid, aa gr. $1\frac{1}{2}$.
Sacch. lactis, q. s.

It will therefore be seen that 500 tablets according to the above formula contain 750 grains of Caroid, or about $1\frac{1}{4}$ ounces. Caroid is sold at only one price and can-

not be obtained at the present time at a cost that would render it possible for any manufacturer to make above tablets honestly and at the same time sell them at a profit at the price named by our correspondent. If genuine, the tablets alone must of necessity cost the manufacturer more than the price referred to.

In addition to this, pharmaceutical houses estimate that the average expense of each traveler's call upon a physician is at least 50c. Therefore our correspondent must assume that the manufacturer is either doing business as a philanthropist, or that his methods are open to question.

VOMITING IN PREGNANCY.

There is perhaps no disorder which the physician is called upon to treat, which remains so persistent in the face of all forms of drug treatment, as does the "morning sickness" of the pregnant woman. The medicines that have been recommended from time to time are innumerable, and the practitioner will often try one after the other unsuccessfully, the patient obtaining no relief until reaching the period of her confinement. Many of the older writers, believing that nausea is one of the normal symptoms of pregnancy, have advised non-interference. But, in the worst class of cases, when all

nourishment is rejected, and when the retching is continuous and painful, symptoms of very great gravity, which may even prove fatal, develop themselves. Gue-riot collected 118 cases of this form of the disease, out of which 46 died; and, out of the 72 that recovered, in 42 the symptoms only ceased when abortion, either spontaneous or artificially produced, had occurred.

What, then, shall be done in these obstinate cases? Shall we admit that we are powerless to afford relief? Is it, indeed, true, that "emptying the uterus" is our only hope? In the light of recent advances made in our knowledge of dietetics and digestion-therapy, we believe that few modern physicians will consider it wise to await nature's decree in these cases, nor to take measures to force her to an early issue. Nor is it essential that the patient should be deprived of nourishment. On the contrary, observation and experience have shown that the greatest nausea occurs when the stomach has been long empty (in the morning) and that frequent feeding affords the most relief and comfort. When we consider that a developing fœtus is to be nourished and fed, such a course would seem to possess physiological advantages not to be had in any "starvation" plan.

In an article which recently appeared in the *Philadelphia Medical*

Journal, Dr. John M. Batten reports the successful results obtained by him (in several obstinate cases which had resisted drug treatment), simply by "feeding" the patient day and night. He recommends that a glass of milk, crackers or anything else the patient may take a fancy to, should be placed on the table near the bed at night, so that she may satisfy her hunger at any time. Before rising in the morning, she should have a good, substantial meal, consisting of coffee, with eggs, mutton chops or beef steak, buttered toast, or whatever else she may prefer. After partaking of her breakfast *in bed*, she may rise, and during the day thereafter she may take about three more substantial meals. Fasting during the night, he believes, is conducive to sickness in the morning, and possibly during the ensuing day.

In the milder forms of "obstinate vomiting," the above plan will sometimes prove successful, even without the efficient aid that may now be afforded in the way of digestion-therapy. But, in those graver cases, when the stomach is absolutely unable to take charge of the food, and fermentation, retching, and all its disagreeable consequences follow, it will be found necessary to furnish digestive assistance. This may be done by taking the digestant with the

food (or immediately after); or, if preferred, when milk is given, it may first be caroidized in the same manner as in infant- or in typhoid-feeding. This latter process will not only prevent the formation of indigestible curds, but insures thorough absorption. For this purpose, two grains of powdered Caroid (or a teaspoonful of Caroid Essence) may be added to each feeding of 8 ounces, and, when the curd has set (within 2 or 3 min.), beat up with a fork or spoon until almost re-liquefied and feed as usual. Other foods which are allowed in a given case, should be followed by a Caroid Powder, or Tablet (2 gr.) and repeated at every subsequent feeding—or until the stomach itself becomes enabled to furnish secretions sufficient to digest the meal and prevent fermentation.

—:o:—

CRITICAL REVIEWS.

THE SOLUBLE FERMENT OR ENZYME.

Under the comprehensive title, "The Soluble Ferments and Fermentation" (Cambridge, 1899), Prof. J. Reynolds Green, D. Sc., F. R. S., has presented to the scientific world that which will doubtless ere long be considered one of the epoch making works of the past century. Before the appearance of this volume the only standard treatise in the English language on the subject (and even

this was a translation from the German), was Schutzenberger's excellent work on "Fermentation." A comparative study of these two volumes is striking evidence of the wonderful advance made in recent years in our knowledge of the fermentative process, as well as in our conception of the term "soluble ferment" or "enzyme." The distinction that has always been made between "organized" ferments (yeast plant) and "unorganized" ferments (enzymes), is shown to be entirely arbitrary. The fermentative process, in both cases, is now known to be brought about by the direct action of the secretion of the cell (i. e., the enzyme), whether of animal or of vegetable origin. When Büchner, three years ago, demonstrated that alcoholic fermentation could be produced by an enzyme (which he termed "zymase") *apart altogether from the yeast cell*, the last barrier which had been erected between the ferments was broken down, and now all are included under the same category.

The results of the elaborate investigations of Loew, Emil Fischer, A. Croft Hill, McLaughlin, Prof. Kestle and others, all corroborate the finding of Prof. Green, that fermentation is, in reality, but the decomposition of complex organic material into substances of simpler composition by the agency of a protein-like-substance, secreted by the cell (animal or vegetable), and known as a "ferment" or "enzyme." In addition to carbon, hydrogen, oxygen and nitrogen, the enzyme contains phosphorus, and probably,

iron, and is therefore, albuminous in nature. The researches of Croftan, Prof. Harper (of the Texas Academy of Science), and others, indicate that the time is not far distant when physiologists will be enabled to demonstrate that every cell of the tissue juices and solids, composing the bodies of plants and animals, contains a soluble ferment which is instrumental in initiating and continuing the various complex processes of life included under the general term, "metabolism," and which is analogous to the process of "fermentation," so-called. Already, "digestion" is included under this head, and it is evident from recent investigations that further changes in the food necessary to its assimilation, are caused in a similar manner by ferments carried in the blood, as well as those existing within every cell. An example of the action of these ferments is seen in the changing of albumose and peptones (formed from food) into serum albumin as soon as they have passed through the intestine in the soluble form into which they had been converted in the alimentary canal. Croftan believes that these ferments are carried by the leucocytes.

As Prof. Green has pointed out in his preface, recent discoveries have shown more and more plainly what a prominent part is played by enzymes in *intra-cellular* metabolism, till it has become clear that the distinction between "living" and "non-living" ferments is based upon an incomplete acquaintance with the metabolic processes in both the higher and lower or-

ganisms, and must now be abandoned entirely in the light of fuller knowledge. The vitalistic theory of fermentation is no longer acceptable, the process having been shown to be analogous to any other chemical change. The fact that the ferments have the power of breaking down complex chemical substances to an extraordinary extent, without themselves undergoing any chemical change, has been accounted for by Prof. Harper and others on the theory that the enzyme action is due to the energy radiating from its substance, and is therefore comparable to light or electricity. That is, the theory is advanced that the process is initiated, not by the chemical interaction of molecule with molecule, but by the molecular vibration of the molecule itself. Or, as one author has stated: "If we grant the existence of molecules, we must grant the existence of molecular vibration, and from this the existence of ether waves spreading out from these vibrating molecules. If these ether vibrations correspond in period with the vibrations of the molecules of the fermentable substances, then 'fermentation' ensues by sympathetic vibration, and, of course, the enzyme is not destroyed in the process." (Cf. *The Medical Times*, July, 1901.) In short, under the theory, enzymes serve in the capacity of *liberating impulses*.

But, as may be observed, in all other chemical and catalytic changes, different reagents or catalyzers (i. e., enzymes), vary widely in individual characteris-

tics—i. e., in molecular composition or arrangement. "Thus far," says one prominent author, "over fifty varieties of enzymes have been named, some of them of great physiological importance—such as pepsin, found in the gastric juice; ptyalin, found in the saliva; and trypsin, found in the pancreatic secretion. Trypsin occurs not only in the digestive fluid of the intestines, but is found also in the pineapple, just as pepsin, found in the stomach, is also obtained from the papaya, and as its ferment or vegetable pepsin, is used in indigestion with even greater benefit than the pepsin. Wherever the enzyme is found, either in the vegetable or animal world, its action upon complex chemical substances seems to be the same, and is one of the principal elements of what is called digestion."

In the fermentation of the sugar, Fischer has shown (Cf. *Einfluss der Configuration auf die Wirkung der Enzyme*) that the enzymes can only "attack those sugars which possess a molecular configuration corresponding to their own"—that is, they must fit each other "as the key fits the lock." Viewing the enzymes as nucleoprotein bodies, and as being optically active, "he reasoned," as Prof. Harper says, "that *their molecules must have an asymmetric structure.*" Their well-known selective action (e. g., toward A and B methyl-glucosides) strongly supports this view. In a similar manner may be explained the "selective" action of the various digestive ferments, which differ

from one another in molecular structure—owing to the different environing agencies surrounding their production. In connection with this subject, it is interesting to note that A. Fernach and Henri Pottévin (Cf. *Pharm. Jour.*, No. 1594, p. 28) have demonstrated that certain fungi can be made to secrete enzymes varying in character, in accordance with the food constituents given them. Thus, they found that certain species (when cultivated in a modified Rawlins' solution in which *tannin is substituted for sugar* as the nutrient agent), yield a zymase which converts tannin into gallic acid.

Extending the experiments of Fernach and Pottévin, The American Ferment Company (as stated in our February issue) has discovered that the same fungi secrete varying amounts of proteolytic or amylolytic ferments, according to whether proteids or starches are made to predominate in their culture mediums; which goes to prove their oft-repeated claims that the peculiar characteristics of ferments are largely a matter *determined by the environments surrounding their production.* As stated in our answer to Drs. Meany and Greenwall, on a subsequent page in the present issue, the ferment of the Carica Papaya (i. e., Caroid) "is now being produced under conditions which years of experience have shown to be right and proper. The American Ferment Company, during the past ten years, have conducted 'Experimental Stations' in no less than seven different portions of the tropical regions of the globe. Nor have their experi-

ments only covered tests of the various species of the Carica, but of many other plants as well—i. e., under conditions of soil, moisture, temperature, etc., all of which have an important bearing on digestive ferments, which (whether of animal or vegetable origin) are greatly influenced by their environment."

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CORRESPONDENCE DEPARTMENT.

Our readers are cordially invited to make free use of this department. Queries regarding the enzymotic action of vegetable ferments and their use in the treatment of disease—or any other question which comes within the scope of THE ALIMENTARY REVIEW—will be cheerfully and promptly answered. We also solicit clinical reports illustrating the action of the vegetable digestive, Caroid, in the treatment of cases, and will be glad to publish the same in this department for the benefit of our readers who may wish to further investigate the subject. Answers to questions of a medical nature will be given only to medical men.

Letters intended for this department should be addressed to "Editor ALIMENTARY REVIEW," care of The American Ferment Co., 81 Steuben St., Jersey City, N. J.

SEE PRICE LIST ON COVER PAGE.

The American Ferment Company.

GENTLEMEN: I have been very favorably impressed with the action of the Caroid

and Charcoal Tablets sent me and would like to know what you can furnish them for in cartons of 300. I fill my own prescriptions, therefore the price of a remedy is of much importance as it largely influences the extent of prescribing.

Respectfully yours,

J. C. MARIETTA, M. D.,
Des Moines, Iowa, Sept. 16, 1901.
1010 18th St.

The American Ferment Company.

GENTLEMEN: Caroid is certainly the digestant *par excellence*. As I cannot procure it from my druggist, I write you direct, asking you to please send at once two ounces powdered Caroid in the safest and cheapest way. I can, with this, prepare any of your formulæ I desire. Please be prompt, as I have patients awaiting Caroid administration.

Yours truly,

C. O. BUCK, M. D.,
Lexington, Miss., Oct. 21, 1901.

ANSWER: Caroid and its preparations are widely distributed, being held in stock by all of the principal wholesalers throughout the country. Yet it cannot be found everywhere; therefore, if any physician should be unable to procure a supply from his local druggist, the manufacturers will be glad at any time to fill an order and forward by mail, postpaid, at the prices stated in our advertisements on another page in the present number of the *Review*. As stated in our first issue (p. 16): "Though Caroid is an expensive product to manufacture, the price has now been so reduced (\$1.35 per ounce), that the actual cost of the powder, dose for dose, is no greater than that of the animal ferments. At \$2.00 per 500, the tablets, as will be observed, may now be prescribed for less than one cent per dose."—[EDITOR.]

REMOVAL OF TATTOO AND POWDER MARKS.

The American Ferment Company.

GENTLEMEN: Several months since I ran across some literature referring to the successful use of Caroid in the removal of powder stains. Could you send me particulars concerning such use?

Very sincerely yours,

M. L. ADAMS, M. D.,

North East, Pa., Oct. 24, 1901.

ANSWER: Caroid has been successfully used for the removal of powder stains by Prof. A. H. Dumesnil, of St. Louis, (*Cf. St. Louis Med. and Surg. Jour.*, Oct. 1900). Prof. Dumesnil advises the following technique for the removal of tattoo and powder marks:

"The tattooed skin is first carefully shaved and then thoroughly washed with soap and water; after this, cleansing with alcohol and 1-1000 bichlorid solution. The skin is anesthetized with ethyl chlorid and the tattooed area covered with Caroid Solvent, which is a bland solution of the vegetable ferment Caroid, especially prepared for use as a physiologic solvent. Next in order is to take a bunch of needles, previously prepared and rendered aseptic, and dip them in the Caroid, driving them in the tattooed part with a sharp blow. This is repeated several times over the entire tattooed skin. Much of the success obtained depends upon the proper preparation of the bunch of needles. The best method is to melt some shoemaker's wax and as it is about to harden put in a number of fine cambric needles, so that they have about $\frac{1}{2}$ inch free, the points being upon the same level. Milliner's needles, No. 9 or 10, will serve the purpose admirably. This curative tattooing must be thorough to insure good results, and yet the needles must not be driven so deeply as to draw any but the least quantity of blood. After this tattooing has been done, the Caroid Solvent is poured over the area worked on, and covered with two or three layers of gauze previously soaked in the solvent. In two or three days, when the latter is removed, the tattoo marks present a hazy, light appearance. Very shortly after some crusts

appear, and when these fall off all traces of the tattooing will be gone. If the least bit should remain the process is to be repeated. As a general rule I have found it necessary to repeat the procedure to obtain the best result."—*Internat. Med. Mag.*, Feb., 1902.

Caroid Solvent has also been used in the local treatment of marginal blepharitis, corneal ulcers and old opacities, the result of corneal ulcers. The following case was recently reported to us by a well-known eye specialist in one of our eastern cities:

"The right cornea of this patient was hazy, the result of a trauma following corneal ulcers. When he came to me the vision of his right eye was $\frac{10}{100}$. After one month's treatment of the application of Caroid Solvent to the cornea every other day, his vision had increased to $\frac{20}{100}$, and after another month's treatment his vision was $\frac{40}{100}$ —that is without any correcting lens. For a number of years he had been troubled every month or two, and sometimes more frequently with a corneal ulcer. I started treatment last January and since then he has had a return but once of the corneal ulcers, and that was when he was away and did not have any treatment. After he came back, I applied the Caroid Solvent directly to the ulcer and in ten days it was healed. It seems almost like a fairy story, but it is true."

The author of the above states that he has also used the Caroid Solvent in purulent otitis media with good results.—[EDITOR.]

CAROID LAXATIVE TABLETS IN SKIN DISORDERS.

The American Ferment Company.

GENTLEMEN: Would you kindly send me a supply of your Caroid Laxative Tablets. Have found them very efficacious in skin disorders due to deranged digestion.

Yours respectfully,

WALTER T. SLAVIN, M. D.,

Brooklyn, N. Y., Oct. 28, 1901.
368 Union St.

ANSWER: Every physician of any considerable experience recognizes the importance of regulating the bowels of the patient (especially of the female) who consults him for the removal of some unsightly eruption. At the same time, he will endeavor to set the digestion aright. The close etiological relationship existing between disorders of the gastro-intestinal tract and the skin, is nowhere more thoroughly exemplified than in those most common eruptions—acne, eczema and urticaria; which in the great majority of instances, can be traced to some chronic digestive disturbance. An unhealthy or muddy complexion with mottled skin is one of the surest evidences of an inactive liver, with its concomitant dyspeptic symptoms, constipation, etc.; and one of the best correctives of such a condition is the remedy which aids the stomach in the thorough digestion and absorption of food, and which, at the same time, aids in cleaning out the “sewer” of the system and thus remove undesirable waste products. A glance at the following formula, for Caroid Laxative Tablets, will at once suggest that, by the administration of such a remedy, the hepatic function will be stimulated to greater activity, and the tegumentary disorder (due to a “bilious” state of the system) will be relieved:

R Caroid, gr. i.
 Cas. sag., gr. 2.
 Podophyllin, gr. $\frac{1}{8}$.
 Ext. belladon., gr. $\frac{1}{16}$.
 Sacch. lactis, q. s.

—[EDITOR.]

MORE EFFICACIOUS THAN ANIMAL FERMENTS.

The American Ferment Company.

GENTLEMEN: May I ask you for a larger bottle of your Essence of Caroid than the small samples kindly left me by your representative? I have personally tested Caroid, in my own case, and have proven to my full satisfaction that it is more efficacious than any of the animal ferments so frequently given in digestive disorders. Thanking you in advance, I am,

Most cordially yours,

WM. E. THOMAS, M. D.,

Brooklyn, N. Y., Nov. 8, 1901.

18 Hanson Place.

NOTE: The preparation referred to by our correspondent, (the “Essence”) is a permanent solution of the Caroid ferment, and is a *valuable vehicle* to be employed whenever a digestive agent is wanted either alone or in combination with other drugs. Its palatability renders it an exceedingly desirable remedy to administer to children, and many physicians are now using it in this form in preference to the powder, as a valuable adjunct in infant feeding, in all cases where the action of the ferment is required to correct digestive disturbances—especially when accompanied with fermentation and diarrhœa. The “Essence” is put up in one-half and one pint bottles, and may be kept for any considerable length of time in a cool place.—[EDITOR.]

MAILED FREE AT REGULAR INTERVALS.

The American Ferment Company.

GENTLEMEN: I have received a copy of the ALIMENTARY REVIEW, and am very much pleased with it. You stated that it would be sent to any one who might order

it. I suppose it will be sent every month. I would like to receive it regularly. Hoping to hear from you soon in regard to this matter, I remain,

Yours respectfully,

J. H. PETTY, M. D.,

"Medical Department,
Tulane University of Louisiana."
New Orleans, La., Nov. 12, 1901.
1603 Tulane Ave.

ANSWER: The REVIEW has thus far been published bi-monthly and mailed to every physician in the United States. It is our purpose to issue it regularly in this manner and see that every member of the profession is furnished with a copy free of expense. The first number was issued in October (1901), and if any physician has failed to receive this or any of the subsequent copies, and desires to complete the files, we will be glad to mail him such missing numbers simply upon his request. If the name of any physician has not been placed upon our mailing list, we should esteem it a favor to be notified of this fact, in order that the error may be corrected.

AN OBSTINATE CASE RELIEVED.

The American Ferment Company.

GENTLEMEN: In my treatment of diseases of the stomach and bowels, I have used every ferment and tried every plan to relieve persons suffering from hyperchlorhydria with stagnation of stomach contents. Every doctor who makes careful stomach analyses after test-meals knows that more than half (?) of all stomach trouble is due to the two conditions above enumerated. Now, in hyperacidity, there is some fault of the gastric secretion whereby the solid food is not properly disintegrated, and even the liquid portion remains an unduly long period, causing dilatation of the stomach and an increase of acid—and the food undergoes fermentation. I

will cite only one case to show you what has been done with Caroid plain, (and here let me say that by performing digestion it prevents any fermentation, and so antiseptics are not needed with it):

CASE.—Mr. L., capitalist, had for five years, been at death's door with "nervous prostration," the result of overwork and worry. He had been treated by several as good doctors as could be found in the United States—in New York City, Chicago, St. Louis, Kansas City, Battle Creek Sanatorium, etc.—and had tried numerous hot springs, all to no purpose. He had also visited the coast, but obtained no benefit. Condition when seen: Stomach greatly dilated; hyperchlorhydria, with stagnation; catarrh of duodenum, and also of colon and rectum; bowels very much constipated; digestion very slow and painful. He had eaten no meat, milk, fruit nor fats for five years, and, as a consequence, was extremely nervous and *emaciated*. He had taken every drug under the shining sun but "Caroid!" I at once put him on Caroid (gr. ij) after each meal, with one glass of water at close of meal. He complained of pain $\frac{1}{2}$ hour after taking his meals and Caroid. I made an investigation, and found that the fluid all left the stomach soon and made it feel uncomfortable. So I ordered two glasses of water. This worked like a charm. In eight days the bowels moved naturally, and mucus disappeared from the fæces. The tongue cleared off and appetite improved. Stagnation ceased and the patient improved as if by magic. Bloating of bowels, and all pain ceased after eight days, and he is to-day the happiest man living. So, in cases of hyperacidity, with stagnation, for which no one has ever known what to do, I can simply say—try "Caroid," and you will never regret it. Have tried it in many cases now, and it has never failed.

If you do not care to send me samples of 100 or 200, send bottle of 150 by mail, and I will send you the money. I have trouble at times to get them in Omaha, and they charge me \$1.15 for 150.

Sincerely yours,

LOUIS M. COON, M. D.,

Arion, Iowa, Dec. 1, 1901.

NOTE: If no mistake was made in the diagnosis of this case, the doctor has obtained results in the

one class of cases in which we might expect a ferment to fail, viz.: *in excessive acidity of the stomach*. Although the digestive power of Caroid is not materially affected by its environment, yet we feel certain that it is somewhat more active in an alkaline or neutral, than in a strongly acid solution. We are inclined to doubt the fact contained in the statement, that "one-half of the dyspeptics suffer from *hyperchlorhydria*;" for certainly, the reports of leading specialists, so far as the writer has observed, would seem to indicate the opposite view—i. e., that the acid secretion is defective in most cases. Great hyperacidity is the worst condition which Caroid (in fact which any ferment) has to contend with, and we are therefore especially pleased to learn of the marked success obtained in the case reported by Dr. Coon, which was evidently one of the most stubborn of its kind. It will be observed that Caroid (plain) was prescribed in this case, without the aid of an alkali. This, we believe, was the proper course to pursue in this instance; for, although an alkali administered with Caroid will generally give temporary relief in these conditions (i. e., hyperacidity), yet, if long continued, alkalis have been found to stimulate the flow of acid, hence they are objectionable where the acidity is already excessive. In our last previous issue (p. 110), we referred to a case of "acid dyspepsia," in which Sir T. Lauder Brunton's plan had been adopted with successful results; i. e., the administration of H. Cl.

In this case, H. Cl. was given about fifteen minutes before each meal, and two of the Caroid Tablets after each meal. The usual alkaline remedies had previously been tried but to no purpose.—[EDITOR.]

A STRONG TESTIMONIAL.

The American Ferment Company.

GENTLEMEN: It has been my good fortune to use Caroid for more than six years with perfect success. I have used it only in those cases where the indications were plain. Many of these cases had been in other hands and had previously run the gauntlet of other digestants without benefit. In some instances, they were benefited by the first dose of Caroid. I would mention one case in particular—the wife of a prominent druggist. She had lost two children from appendicitis (under unfortunate circumstances) and had drifted into a mental condition bordering on melancholia. She suffered from "colicky" pains in the bowels, amounting sometimes to a severity that demanded the prompt employment of anodynes in large doses, to obtain relief. Caroid (with strychnia) effected a speedy cure.

I have experienced some difficulty in procuring Caroid here, but am amply repaid for my trouble. When the general practitioner becomes acquainted with its virtues, he will find himself relieved from much needless anxiety, for he will discover that the cases which formerly brought on "shivers," when they appeared at the office door, may now be welcomed with a warm feeling around the heart and a bright smile. It may be characterized a "God-send" to the general practitioner, and offers freedom from the toils of the many preparations of decayed or decaying pepsins—which I abandoned long since. A few weeks ago, I had a patient (from a well-known sanatorium) suffering from intestinal indigestion, who was relieved by the first day's use of Caroid; and who has emerged from a state of melancholic forebodings (which threatened to chain her to a bed of invalidism the remainder of her life) to a frame of mind which looks for-

ward to freedom from ailments of all kinds. She had been the victim of a hysterectomy (with removal of appendages); but her intestinal trouble, like Banquo's ghost, would not down. The surgeon said pressure from "enlarged womb" had caused it—then "improper diet"—then the "menopause"—then various other conjectural causes *ad nauseam*. Notwithstanding all this, she was promptly relieved by the use of Caroid!

Very truly yours,
JNO. B. BARKERVILLE, M. D.,
Dublin, Va., Dec. 2, 1901.

CAROID WITH CASCARA, ETC., IN "HABITUAL CONSTIPATION."

The American Ferment Company.

GENTLEMEN: I desire 500 of the compound tablets of Caroid—the formula which contains cascara. I have found them superior to anything I have used in habitual constipation. Perhaps you will remember sending me 150 of these tablets. Have never known the price of these tablets, but I send \$2.25. Send me 500 tablets, and if the money inclosed is insufficient, send me the amount of the deficiency and I will at once remit. If you have any literature on Caroid, please mail it to me, and be sure to send me price list of all the Caroid preparations. I am more than in love with Caroid.

Yours truly,
W. H. BENTLEY, M. D., LL. D.,
Woodstock, Ky., Dec. 6, 1901.

ANSWER: The amount (\$2.25) inclosed for one bottle (containing 500 Caroid Laxative Tablets) was correct, and we have taken pleasure in forwarding the same, together with the literature requested—(our pamphlet on "Digestion," etc.) The "Laxative" Tablets (Caroid combined with the active principles of cascara, podophyllin and belladonna) have been prepared with the distinctive object of furnishing to the profession a remedy *par excellence* in the treatment of constipation; i. e., one which will

not only aid the bowel in expelling its contents (which any other laxative may do), *but which will help to remove the cause of the constipation.* The oft-repeated failure to obtain certain expected results from the employment of drugs in constipation, may be likened to the failure of foods to nourish the patient who is dyspeptic. In one case, the drug is administered which is properly indicated; in the other, the food is ingested which the system requires,—but in neither case does the patient receive any benefit. Why? Because it is not what we eat but what we digest; not what we swallow, but what we absorb, that enters the body as fuel. Prof. Alfred Stillé once said: "No state of solution is so favorable to the absorption of a medicine as its union with the organic solvents (digestive ferments) it meets with in the body, and no other solvents will be so apt to produce a solution so well adapted to the proposed economy as those referred to."

From the above, it is apparent that the conditions most favorable to the solution and absorption of drugs, would be those prevailing in the body in a state of perfect health, when drugs are not needed. In disease, owing to the torpor of the stomach or intestines, produced by local disturbances, febrile disorder, imperfect excitability of the nerve centres or mucous coating which frequently covers the alimentary tract itself, medicines may be slowly or imperfectly absorbed or rejected altogether by vomiting. In short, to obtain proper therapeutic effects of the drug administered, the latter must meet

with conditions identical with those which are essential to the digestion and absorption of food itself. Any digestive agent therefore, which aids or increases the action of the gastric and intestinal secretions, which possesses both proteolytic and amylolytic properties, and acts equally well in both acid and alkaline media; one also which cleanses the alimentary membrane by dissolving the coating of mucus which may collect, cannot be other than an effective aid in the absorption and consequent action of drugs. Such an agent, we believe, has been found in Caroid. Dr. Drumheller, (Cf. *Toledo Med. and Surg. Jour.*, Feb. 1901) is of the opinion that it "cannot be given amiss to almost any patient irrespective of the disease for which he may be treated." He says: "I have usually given it in doses of from one to three grains, with such drugs as salol, hydrastin, *podophyllin*, *cascara sagrada*, gentian, etc.,—in fact, I have combined it with almost all therapeutic agents of established value. My experience has satisfied me that in so doing, two objects are attained; viz: 1. *The correction of the digestion, nearly always faulty in illness*; 2. *Better absorption of drugs, hence better therapeutic effects.*" If the foregoing observations have any force, it will at once be seen why the cholagogue drugs, (in Caroid Laxative Tablets) will prove more effective when thus combined, than when these same agents are used *minus* the Caroid.—[EDITOR.]

NOT THE "CARICA PAPAYA" FROM WHICH CAROID IS OBTAINED.

The American Ferment Company.

GENTLEMEN: I will be obliged to you for a sample of your Caroid Laxative Tablets. I have been using your Caroid and Soda Tablets for some time, and am recommending their use to those who suffer from digestive irregularities. I am familiar with the Carica Papaya (melon), my attention having been called to it many years ago by Mr. William Garesche of St. Louis, formerly U. S. Consul at Martinique, West Indies. I have used your Caroid Tablets since my notice was called to them in medical journals. I have, however, been unacquainted with your Laxative Tablets. Are they on sale here, and where?

Sincerely yours,

W. B. MEANY, M. D.,

Washington, D. C., Dec. 6, 1901.

Franklyn Park, 14th & K. Sts.

The American Ferment Company.

GENTLEMEN: I have just returned from the Philippines, and have seen the "Papaya," from which "Caroid" is obtained, in its natural habitat. It is a tall, graceful tree, without branches, topped by a number of broad-spreading leaves. The fruit grows from the trunk of the tree, just below the leaves, and appears in every stage of development, the ripe fruit being below. The natives use both the fruit and the leaves in cooking meats, and there is no doubt of the digestive power of both. A tender leaf thrown into a pot of meat or vegetables, has the effect of rendering both not only more easily cooked, but more palatable. The ripe fruit is a rich yellow, and is very sweet and juicy, and regarded as a great delicacy. The green fruit is cut into small cubes and cooked with chicken, forming the dish called "pinola," so much relished by the Spaniards. I found the fruit in general use as an article of food for the sick, and even the wild tribes in the interior of Luzon were aware of its digestive quality. For many months "pinola" was the only available food for the sick and

wounded under my care, and it answered the purpose admirably.

Very respectfully,

J. C. GREENWALT, M. D.,

Lieut. Capt. and Ass't. Surg. 33rd U. S. Vols.

Chambersburg, Pa., Nov. 16, 1901.

ANSWER: Dr. Greenwalt, also Dr. Meany, refers here to one of the several kinds of common Papaw found in the tropics in general cultivation and use. It is one of the twenty-six varieties of the *Carica Papaya*; but, as we stated concerning other papaws in our last previous issue of the *Review* (p. 108,) it is not the plant from which Caroid is obtained. These cultivated members of the family, do, however, possess to some degree the peculiar digestive properties of the species—as does also, in a lesser degree, *Ficus Carica* (common fig), another member of the family. But the enzymotic properties of these cultivated varieties are too weak for the purpose of the manufacturer, who has found, in one of the species growing wild in Polynesia, the most suitable and practical source of supply for his crude materials. The Polynesian Papaw, while producing inferior edible fruit, has yet been found by The American Ferment Company to be the best from which to extract the ferment principle which is so prized for its therapeutic application, and upon which the remarkable digestive properties of Caroid depend. It is now being produced under conditions which years of experience have shown to be right and proper. The American Ferment Company, during the past ten years, have conducted "Experimental Sta-

tions" in no less than 7 different portions of the tropical regions of the globe. Nor have their experiments only covered tests of the various species of *Carica Papaya*, but of many other plants as well, under conditions of soil, moisture, temperature, etc., all of which have an important bearing on digestive ferments, which, (whether of animal or vegetable origin), are greatly influenced by their environment. As stated in our February number (p. 121):

"Extending the experiments of Fernach and Pottevin, The American Ferment Company have discovered that the same fungi secrete varying amounts of proteolytic or amylolytic ferments, according to whether proteids or starches are made to predominate in their culture mediums. Which goes to prove our oft-repeated claim that the peculiar nature of ferments is largely a matter *determined by the environments surrounding their production.*"

—[EDITOR.]

NO SUBSCRIPTION PRICE.

Editor Alimentary Review:

I received No. 1, Vol. 1 (October) of the *Journal*. By some mistake it got into the "wrong pile," and when I discovered it a few days ago, I read *all* there was left of it, the cover and perhaps more having been removed. I was much pleased with it—more so perhaps as it comes in the line of my favorite practice, and I write to inquire if it is issued regularly? If so, please send again the October number and subsequent issues, and begin my subscription with October; and, unless the booklet states price (this does *not*, but may have been torn out), please notify me, when I will remit.

Diseases of alimentation form a larger class here in the colony than anywhere I ever lived. One reason perhaps, is that some 4,000 here are from the North, and one in every family an "old soldier" (if

alive). Later I may contribute to print at your pleasure.

Respectfully,
S. B. COE, M. D.,

President U. S. Exam. Board for Pensions;
Sanitary Minister to the Old Soldiers' Colony, Etc.
Fitzgerald, Ga., Jan. 10, 1902.

ANSWER: As stated in an editorial in our February number (in answer to Dr. Walsh, p. 107), the publishers intend to issue this little journal regularly and mail it *gratis* to physicians for the following reasons:

1. They wish to acquaint the members of the medical profession with the therapeutic properties of a comparatively new digestant—Caroid.

2. They have taken this means of presenting the drug to the notice of physicians, because it offers an opportunity to discuss the matter in all its various phases.

3. They believe that before a physician is justified in prescribing a new remedy, he must first be convinced of its utility.

4. They believe that an appeal to his intelligence is the only way to attract the physician's interest and attention; and it is their purpose, in the pages of the *REVIEW* to demonstrate to him that a vegetable ferment has been found which is superior to other therapeutic agents in the treatment of *diseases of alimentation*.

5. They also wish to present the matter of "food, diet and digestion" in all other bearings fairly, and in this way, to furnish literature which will be of some profit to the practitioner who is interested in this subject.

It will be seen, therefore, that the publishers expect no "subscription price" for the *REVIEW*. On the contrary, they will be pleased (on his request) to send a copy to any physician who has not yet received one.—[EDITOR.]

QUICK RESULTS.

The American Ferment Company.

GENTLEMEN: I enclose \$2.00 for 500 Caroid Tablets (plain). I must tell you that I have a patient who has given me no end of trouble for three months. He has been unable to digest anything, or to take any food that I could suggest, predigested or otherwise, without severe pains for several hours after, and has been losing flesh and strength at a rapid rate. Your tablets came yesterday morning and he has taken two after each meal. He has not had a particle of discomfort since, and is already a new man. I am rejoiced to find one medicine that I know there is no humbug about.

Yours very truly,

S. P. LADD, M. D.,

Moosup, Conn., Dec. 15, 1901.

—:O:—

SELECTED ARTICLES.

VEGETABLE DIGESTIVE FERMENTS IN THE TREATMENT OF TYPHOID FEVER.

BY J. M. SHAW, M. D., EAST SPRINGFIELD, OHIO.

(Reprinted from the *Medical Mirror*.)

The multiplicity of methods existing to-day, in the dietetic treatment of typhoid fever, is the strongest evidence possible of the unsatisfactory condition of the professional mind upon this subject. Owing, however, to the protracted convalescence and extreme physical weakness following the majority of attacks, there is a fast grow-

ing belief that orthodox customs may, perhaps, be improved to advantage and a more generous diet be recommended; for, that the nutrition of the patient should be supported to the best of our ability in continued fevers, is a fact admitted by all.

It is believed that the practice, so long observed in the large London hospitals, of resorting to "two hour feeds," consisting of but three pints of milk in the twenty-four hours, was first instituted on the continent by the eminent French physician Trousseau. How far this ancient custom may be departed from, with safety, is a question which of late has received, both in England and in this country, a good deal of attention. In 1897, Dr. A. G. Barrs, in an elaborate article appearing in the *British Medical Journal*, opened up this whole subject; and still more recently, Dr. R. W. Marsden, the Medical Superintendent of the Monsall Fever Hospital, has published the results obtained in two hundred unselected cases of enteric fever, in which a more liberal dietary was allowed. Again, in the *Medical Brief*, for August, 1900, Dr. William Murrell, of the Westminster Hospital, states that he "has of late departed from the rules laid down for guidance, and, is sure, with advantage to the patients, especially in the direction of shortening the long period of convalescence." He is of the opinion that it is useless to adhere too strictly to any time limit for feeding, and that the best indication for the administration of a

more liberal dietary is the demand for it on the part of the patient.

That a careful regulation of the diet, however, is a point of great importance in the management of cases of typhoid fever, is of course well understood, for the peculiar ulceration of the bowels in this disease gives rise to a danger of its own that demands special consideration in the treatment. The food, therefore, should be thoroughly digested, leaving no unnecessary residue to create irritation in its passage through the intestines. But at the same time, it is of equal importance that the food should be nourishing and general nutrition maintained, for in no other disease does the high fever and other exhausting symptoms induce more excessive prostration or greater loss of strength and emaciation. To sustain the strength of the patient, and yet avoid intestinal irritation, is, then, one of the problems which the physician is called upon to solve, in his management of this troublesome complaint.

Milk has been selected as the chief article of diet in these cases not so much on account of its food qualities, as because of its liquid character, its ease of administration, and lack of intestinal waste *when properly digested*. But even milk has been found objectionable in many instances, the deficiency or vitiation of the digestive secretions causing it to remain undigested and unabsorbed in the alimentary tract, giving rise to fermentations, or passing through in the form of tough curds setting up

increased irritation of the inflamed mucous surfaces and often producing dangerous hemorrhages. It is true that lime water has been combined with the milk, and attempts have been made with animal ferments to effect artificial peptonization, but owing to the incompleteness of the latter process, the results have often been far from satisfactory. In the experience of the writer, pepsin fails to convert the casein of the milk into true assimilable products, and untoward abdominal symptoms have usually resulted, such as nausea, flatulence, etc.

The difficulty in affording nourishment to the victims of this disease, during the height of the fever and even for a week following its abatement, is doubtless owing principally to the almost complete inability on the part of the digestive organs to perform their natural functions. Unlike ordinary cases of dyspepsia or indigestion, where simply one or more of the digestive secretions may be deficient or at fault, we are here confronted with a condition in which not only are the essential glands temporarily disabled, refusing to secrete their respective ferments, but in which almost the entire alimentary tract itself is involved. Food, as ordinarily presented, will under such circumstances, remain behind chemically unchanged, except as undergoing the usual putrefactive processes, and thus serve as a foreign body to cause further complications. Recognizing this unfortunate state of affairs, it has been deemed advisable by many physicians to re-

frain from attempts to introduce nourishment at all—unless in the form of milk, peptonized or otherwise—leaving the patient to feed on his organized tissues until the battle with the disease is won or lost.

But with the advent of the vegetable digestive ferment, it is believed that an opportunity has been given to wage an entirely different mode of warfare. It has long been thought that the supply of digestive and other soluble ferments of the body, have all been derived from the vegetable world through our food, becoming split up in the animal organism into their present specific forms with correspondingly restricted action.

This would be but following out the well-known evolutionary law, that as life evolves higher in the scale, organs become more numerous, and with more definite and dependent functions; in other words, in organic life as in social life, there is a *division of labor*, work previously done by one individual being subsequently, as civilization advances, divided and subdivided, and allotted to several. Thus the simple vegetable ferment, which acts upon *all* kinds of food in *any* medium, becomes differentiated in the animal economy into several other definite but dependent ferments—pepsin, ptyalin, pancreatin, etc.;—each having its own special duty to perform, acting in its restricted environment; i. e., one digesting one class of foods (proteids) in an acid medium, another, a different class of foods (carbo-hydrates) in an alkaline medium.

With the aid of the vegetable ferment, acting as it does throughout the entire alimentary tract, such easily digested articles—as milk, white of egg, broth, custard, sago, etc., may be administered in those diseased conditions (as in typhoid fever), in which the natural digestive functions are partially or wholly in abeyance, with the assurance that such food will be rendered entirely soluble and diffusible and thus readily absorbed into the system—leaving no appreciable waste to irritate the intestinal mucous surface.

It has been suggested, too, that the therapeutic virtue of our extracts and tinctures may be due to the vegetable ferments contained in them. "Of late years," says a writer in *Merck's Archives* [Cf. *The Dietetic and Hygienic Gazette*, June, 1900,] there has been a great deal of speculation regarding the various enzymes of the soluble ferments that are supposed to exist in the animal body, and much work has been done toward isolating a number of new enzymes both in the vegetable and the animal worlds. Pathologists and physiologists are studying them with great zeal, and the feeling is gaining ground that they may be very important factors in both the cause and the cure of disease. The toxins and antitoxins are by some believed to be related to the enzymes, and to benefit or harm the organism by changes analogous to those wrought by known soluble ferments.

It is not improbable, therefore, that many of the toxins of the human body, such as exist in

typhoid fever, are permitted to thrive in the alimentary tract owing to failure on the part of the glandular system to perform its functions and secrete the ferments which would tend to neutralize or inhibit their growth. If so, then the administration of the vegetable ferment would serve a double purpose; and it is believed by the writer that such is the case. The gratifying results obtained from its use in cases of continued fever, as well as in the entero-colitis of children, would seem to indicate that it not only is effective as a digestant, enabling the system with increased nourishment to better withstand the ravages of the disease, but that it also possesses some specific inhibitory action upon the growth of the disease germ itself.

Of the vegetable digestive ferments yet obtained, those derived from the plant *Carica Papaya* are doubtless the most active—especially Caroid, which has been shown by the carefully conducted experiments of Prof. Chittenden of Yale, to possess both proteolytic and amylolytic powers superior to any of the others. Its value as a therapeutic agent is enhanced, too, from the fact that its action is not inhibited, but rather increased, in the presence of neutral and alkaline salts and various antiseptic drugs. Furthermore, its digestive action upon milk renders it an agent of the first importance in these cases, as in typhoid fever and entero-colitis, in which this food is indicated. Three or four grains of the powder, stirred into a glass of pure fresh milk, heated until it is

lukewarm, and allowed to stand two or three hours in a temperature of about 100° F., will produce an immediate separation of the casein from the whey, followed soon afterward by the gradual digestion of the former until it is entirely converted into assimilable products. The value of such action in the alimentary canal is at once apparent.

Instead of adopting the starvation plan of treatment, during the first two weeks of typhoid fever, the writer has prescribed this ferment in conjunction with a milk diet, and always with the most excellent results. During the convalescent stage, after the fastigium has been passed, some more solid food, such as rare beef, and toast with milk, is given, which, like the milk itself, is speedily and thoroughly digested by the Caroid, leaving little or no intestinal waste, the writer having yet to learn of a single instance in which any untoward abdominal symptoms, which are usually so troublesome, have followed the use of this ferment.

—:o:—

APPLIED KNOWLEDGE.—“Spell ferment and give its definition,” requested the teacher.”

“F-e-r-m-e-n-t, to work,” responded a diminutive youth.

“Now place it in a sentence, so that I may be sure you understand its meaning,” said the teacher.

“In the summer I would rather play in the woods than ferment in the cornfield,” returned the small scholar.—*Ex.*

RECITAL OF CASES.

Mrs. H., carcinoma of the breast; removed on May 31st. Operation long; anæsthesia profound; and patient much emaciated. Recovery from the anæsthetic, accompanied with unusually severe nausea and vomiting. For three days no food nor stimulants could be retained in the stomach, and the success of the operation was endangered through physical exhaustion. On the morning of the fourth day, the tablet containing the ferment (Caroid, gr. j., Soda Bicarb., ii) was given with the meal, consisting of egg albumen and meat extracts, which was then for the first time retained and digested. On the following day tablets of iron and strychnine were given immediately after the meal, without interfering with the action of the ferment, the food being retained and digested as before. The treatment was continued in this manner for three weeks, at the end of which time the patient's general condition was much improved, and food was taken and digested without the aid of the ferment.—S. Green, M. D., in *Internat. Jour. of Surgery*, Sept., 1900.

I maintain that attacks of seasickness can be aborted, or the length of the attack reduced to a minimum, by an easy and rational method. Keep the patient on deck, weather or no weather (all night if it is warm and close), cheerful conversation to take the attention as much as possible from that fateful stomach, and food taken at

frequent intervals, each portion of food, of whatever character, to be followed by a tablet of Caroid and Charcoal. Sustain the system, make the food *go into* the system quickly, and the victory is half won. I have for years never been without Caroid in my house in a convenient place of access for myself and family. If the pleasures of the table are too freely indulged in by any of us, we have a warm friend in Caroid.

When I started for a trip "to the other side," with my "gude wife" and daughter, Caroid and Charcoal Tablets naturally took a prominent place in our "Armamentarium Medicus," but with no idea of using it in seasickness. The wife and daughter could hardly smell salt water without suffering from "mal de mer." I urged them not to take the bromide treatment unless they wanted to spoil the trip; I was a little anxious about them. The first day, almost the first hour, they became ill, and I commenced the food stuffing process, which was as promptly rejected by the stomach. After some time spent in this kind of effort, I thought of my Caroid Tablets, and I at once tried them. There was an improvement with the very first dose, that is, the food was retained a longer period, and the time between the attacks was extended, until when the day was over, they were retaining the food, and what was as good, digesting it, and receiving strength therefrom. The next day the sickness was gone and my patients bright and happy, taking their meals as if they were on land,

though taking two tablets of Caroid with each meal. Several other cases were treated in the same way, and with the same results. One lady, 49, American, who was always ill from the start to the finish of the voyage, which she had made six times. The Caroid treatment with the food, brought her to the dining room at noon of the third day out. This was considered a great triumph. The only other medicine the woman took was a teaspoonful of thialion, on rising in the morning, to clear out the bowels and stimulate the liver, which it invariably does.

My conclusions, then, are: Feed the patient, whether he wants it or not; accompany each portion of the food with a tablet of Caroid and Charcoal, and you will reduce the "fiend" to subjection and bring happiness and joy, where before was torment and lament.—Wm. C. Wile, M. D., LL. D. (R. M. S. Germanic, Queenstown, Ireland, Aug. 1, 1900), in *New Eng. Med. Monthly*.

Mrs. T., landlady, æt. 58, was of a bilious temperament, corpulent and weighed 180 pounds. For a number of years she had been subject to acute attacks of indigestion, for which she had received the customary routine treatment, resulting in only temporary relief. During the past winter (in December, 1900) the patient suffered an attack of la grippe, complicated with a severe gastric catarrh which involved also the small intestine. For many days she was troubled with vomiting, also discharging

from the bowels considerable quantities of very offensive mucopurulent matter, containing vitiated blood. The abdomen was tympanitic; hands, feet and ankles were œdematous. The gravity of the case was such, that it caused me to suspect gastric cancer. Cardialgia and pyrosis were almost constantly complained of, being very painful and annoying, and accompanied with distressing flatulence. Characteristic offensive gases were discharged, humiliating the patient, and rendering her extremely nervous. Anorexia alternated with an abnormal appetite, but at no time could any but the lightest liquid nourishment be retained. An intermittent gastric fever was present from the outset, and required attention throughout the attack.

The treatment on this occasion consisted simply in a thorough evacuation of the bowels, by the administration of an effective hydragogue, which resulted in the passage of numerous masses of scybalæ, mixed with a very offensive tenacious mucus. Subnitrate of bismuth was then given for its sedative action. The fever abated somewhat after the purging, and was subsequently controlled by febrifuges. For diet, malted milk, with wine, was recommended; also peptonated beef and milk, with soft boiled egg and crackers. I saw no more of the patient until a few weeks afterward, when I was called to find her suffering from a similar attack, but in many respects worse. There was constant nausea, with occasional vomiting; severe cardialgia, resembling gas-

tralgia; pyrosis; gastric fever—temperature ranging about 103; insomnia; tympanitis, marked; also considerable œdema of extremities.

This time, after the administration of the purge, and the expulsion of offensive excreta, the following prescriptions were ordered:

1 R Tablets Caroid plain, gr. ij. No. xxx.

Sig. Take one at meal times; diet to consist of malted milk punch, using pineapple wine.

2 R Tablets Caroid and Charcoal No. Lx.

Sig. Two tablets three times daily, immediately after meals.

In addition to the Caroid a sedative was given. Within three days' time, under this treatment, there was marked improvement in the patient's condition. The appetite was restored, and absorption and assimilation of food were seemingly perfect. On the seventh day after the onset of this attack, the tympanitis and œdema had disappeared, offensive eruptions of gas had ceased, and the excreta had become normal. The same treatment and diet were continued for another week, at the end of which time the patient had so much improved as to be able to attend to her household affairs, and stated that she felt better than she had before in two or three years.

On May 8th (a fortnight after the attack), the patient was superintending her hotel as usual. She was allowed more latitude in her diet, though still continuing the tablets. On May 10th, she reported that she could eat of almost any variety of food with impunity;

a luxury which she had not enjoyed before in many years. On July 20th, the patient reported that she considered herself entirely cured, but added that she would not be without the "black tablets" (Caroid and Charcoal).

Sept. 10th. Met the patient, Mrs. T.; she still enjoys good health; has had no symptoms of her former trouble since the last attack, April 15th. She still takes the Caroid Tablets occasionally. The above is but a sample case of the beneficial effects to be derived from the use of the Caroid ferment. The writer has frequently used it in other cases of maldigestion, and is satisfied that in this remedy the profession has something new and valuable.—W. A. West, M. D., Brownwood, Tex., in *Texas Medical Journal*, March, 1901.

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ITEMS AND NOTES.

Dietetics in Medical Schools.—

In no subject has medical need been more insufficiently met by educational supply than in that of practical dietetics. But two medical schools offer instruction, and textbooks are few and inferior. At the University of Minnesota the course is elective in the senior year. It is essentially practical, acquainting the student with the contents of common foods, their economic value, digestive, nutritive, metabolic and esthetic qualities, and with the principles and practice of food preparation. At the close of the 16 weeks of study

the members of the class are competent to select, prepare and serve physiologically and artistically any desirable form of food. They can intelligently criticise or direct the cooking of a meal or any special diet.—*Beard, in Jour. A. M. A.*, Feb. 1, 1902.

Impure Milk.—It is estimated that one-third of the children die before they are three years old, and one of the leading causes of infant mortality is impure milk.—*United States Department of Agriculture.*

Numerous outbreaks of typhoid fever have been reported where there was no doubt about the milk supply being the carrier of germs. Outbreaks of diphtheria have been traced from milk to farms where diphtheria has been known to exist in the families of the attendants.—*United States Department of Agriculture.*

Pasteurization or sterilization of milk removes none of the causes of disease. Instead they create additional evils. Sterilization should begin in the stable and not be applied to the milk itself.—*Dr. Louis Fischer.*

Pasteurization of milk is the direct cause of a large number of cases of scurvy in children of well-to-do parents. Scurvy was an unheard-of disease in infants before sterilized foods were introduced.—*Dr. Joseph Winters.*

Ferments of Tissue Cells.—Typical cellular secretions are found in the gastro-intestinal

glands, salivary glands, and the pancreas. These secretions contain a ferment, an enzyme, a diastase, etc. Not only are the toxins, produced by the presence of bacteria, also ferments or diastases, but the secretion of cells themselves may become toxic. Fermentation ceases after a time, being limited by the destruction of the ferment, its surroundings, the elimination of bacteria, etc. Bacteriolysis, cytolysis, hemolysis and phagocytosis all occur, and agglutinins, lysins, and coagulins are found in the blood. The production of antitoxin is regulated, not only by the quantity of the poison injected into an animal, but by the activity of the animal's cells. These facts apply especially to the secretions of the leucocytes.—*La Presse Medicale*, Nov. 13, 1901.

Lay Manufacturers and Physicians.—A protest is needed, and a strong one, against the irrational and unjust prejudice shown by some physicians against manufacturers of pharmaceutic and other products used by the medical profession, and against their advertisements in medical journals. Our experience is that many lay manufacturers are as a rule quite as honorable and as good citizens, that they exhibit indeed quite as good a professional spirit as do many physicians. There are bad men in both callings. Self-laudation through dogmatic and indiscriminate abuse of the manufacturers is both stupid and silly. In the first place we should sweep and clean our own house. If manu-

facturers are wicked it is even worse for physicians to use the bad articles made by them. They are under no compulsion to do so, and our wrath might very fittingly be expended upon those of our own household. And in reference to advertisements in medical journals, it may also be suggested that, when they are of good character and made by reputable firms, criticism by the profession is hardly just except when 10,000 physicians shall first agree to pay \$10 a year for a weekly journal without advertisements.—*American Medicine*, July 6, 1901.

Lavage.—Lavage is a simple matter. You need a stomach tube, the end of which you pass down the patient's throat to the stomach, which is easy enough with a little practice. Patients of ordinary intelligence quickly learn to use it themselves. Then you pour into this tube whatever liquid you desire to use to wash the stomach out, solution of common salt, of sodium bicarbonate, boric acid, or whatever you desire, filling the stomach and then siphoning the fluid out until it comes back clear.—*Alkaloidal Clinic*.

Victuals and Vices.—At a Pu-
rity Congress held last week in Chicago, a medical delegate read a paper on diet. He held that much of the sensuality in the world was due to the use of animal food, and looked on the products of the vegetable kingdom as active agents of sexual morality. "The cook," he

said, "often leads to more drunkenness and excess than the saloon-keeper. High seasoning and rich animal foods lead to indigestion and ill-health. Ill-health weakens the will and breaks down the moral character. Total depravity is often nothing but total indigestion."—*Med. Rec.*, Feb. 1, 1902.



More Nutriment Wanted.—It is a truism to say that we are nourished by what we digest rather than by what we eat, yet people who eat cold storage food, are not profiting by the knowledge.

The digestive organs are not as easily fooled as the mind, and will not digest and absorb the decaying matter put into them in the shape of cold storage meats. Sooner or later they become irritable at being asked to stultify themselves in this way. Nausea develops, peristalsis is perverted, vomiting and diarrheas set up.

This is the course of healthy organs. If they be *weak*, capricious cravings, trembling and sinking sensations, skin eruptions, renal insufficiency, perhaps enteric fever, chronic dysentery, or mild septic attacks, simulating malaria, will mask the primary trouble, which is the lack of nutriment, and the introduction of poisons from cold storage food.

Sporadic outbreaks of infectious disease and attacks resembling uremia or eclampsia, may sometimes be traced to the same cause.

In diseases of this character, and in any chronic, low state of health, where the cause is not

readily determinable, inquire as to the nature and sources of the diet. All sick people require digestible and nourishing food. Nutriment can not be obtained from meats kept in cold storage. But people do not know this, and the doctor must educate them that a strong public opinion may be formed against this growing industry.

Health, strength, virtue, depend largely on what we eat. Cold storage food will make abject, spiritless beggars, bloated and blotched with disease.

It is the doctor's province to insist upon good foods and pure medicines for his patients. Genuine nutriment is what we want. Digestive shams are not to be tolerated.—*Ex.*



The Fat-Splitting Enzyme of the Stomach.

—One of the most interesting of the recent discoveries in physiological chemistry is the detection by P. Volhard, of a fat-splitting ferment in the gastric juice. Volhard (*Zeitschr. f. Klin. Med.*) states that if an emulsified fat, such as the yolk of an egg or milk, be mixed with gastric juice, and the mixture kept at body temperature for about an hour, the emulsion will be broken up, and the fatty acids will be seen floating on the surface of the fluid. Artificial emulsions and non-emulsified fats are only slightly affected; a glycerine extract of the stomach has a similar action to the gastric juice, and, like pepsin, the steatolytic ferment appears to

be secreted principally by the mucous membrane of the fundus of the stomach. Boiling of the gastric juice or glycerine extract destroys the action of the ferment. The presence of hydrochloric acid and pepsin has also a deterrent influence on the activity of the enzyme. What practical benefit may result from the discovery of this ferment it is impossible at the present time to say; but it will no doubt aid us in solving some of the difficulties which we now encounter in dietetics.—*Dom. Med. Mon.*

A New Fruit.—There is every reason to suppose that before long a most delicious fruit, new to America, will dominate our markets; already a few specimens have found their way to the seaboard cities, says the *Southern Clinic*. This is the mangosteen—native to the Moluccas and extensively cultivated in Ceylon and Java, and latterly introduced in Jamaica and other parts of the British West Indies. It is about the size of a small orange, spherical in form, and when the rind is removed a juicy pulp, “white and soluble as snow” is revealed, possessing a most delicious flavor—something like a nectarine, with a dash of strawberry and pineapple combined. It promises, in a few years, to supersede the orange in popular favor, and attempts are already being made to introduce it into the southern United States.—*Med. Times*, March, 1902.

THERAPEUTIC SUGGESTIONS.

GASTRIC AND INTESTINAL “IRRITATION.”

BY RALPH ST. J. PERRY, M. D.,
FARMINGTON, MINN.

(Reprinted from *Med. Brief*, March, 1901.)

The case described by Dr. C. W. Canan, and for which he asks us to give a diagnosis, is one of the many cases we meet where it is impossible to name the disease, because of the many phases presented. It is one of the kind where it is policy to talk of the “many complications” and look wise. The man evidently started out with a congestion of some one of the abdominal viscera, most likely the stomach. It is nothing new for patients who eat freely of new potatoes to suffer from gastric and intestinal irritation, for new potatoes have in them a toxic principle which produces just such a train of symptoms as Dr. Canan describes in this case. I have seen cases where the symptoms pointed very strongly to arsenical poisoning and yet there was not the slightest reason for suspecting arsenic, nor did a chemical analysis reveal any traces of the mineral. In making a diagnosis of neuralgia, the doctor merely named a symptom of the internal disturbances, and did not specify the cause. Had I been called upon to prescribe at this stage, I should have given bryonia and arsenicum album in the third homeopathic triturations. For the indigestion, I would have given Caroid, as I have no faith in pepsin. The progress of the case shows the various stages of enteritis, peritonitis, cystitis, cellulitis, and in fact, a

general inflammation of the pelvic viscera. Some of the symptoms indicated appendicitis, and no doubt there are those who would have added this young man's obituary to the long list already charged up against that "itis." The formation of an abscess is a not unheard of thing in pelvic cellulitis, and both Dr. Canan and his patient are to be congratulated upon the outcome of this case.

MEMBRANOUS CROUP.

BY LOUIS J. PONS, M. D.,
ROXBURY, CONN.

(Reprinted from *Texas Medical Journal*,
June, 1901.)

Diphtheric, or true croup, is probably the most fatal disease of childhood, one which kills with such rapidity, and where our best remedies prove of so little avail, that it is not strange that the medical attendant feels helpless when called to treat a case of genuine croup. Theoretically, many of our standard prescriptions ought to relieve, but on trial prove to be failures. To witness the gasping and struggling for breath, and other symptoms caused by impeded respiration and imperfect oxidation of the blood, and the inability to help the sufferer, is unpleasant and appalling to any physician. During a practice of fifteen years, I have attended quite a number of such cases, with a mortality of eighty per cent. Last winter I treated two cases, and both recovered.

CASE I. A. F., male, aged twenty-two months, for two days previous to my first visit had what the mother supposed to be a hard cold.

I found the child's temperature 102° F., pulse 135, appetite poor, bowels constipated, and urine scanty, obstructed respiration, and the peculiar cough characteristic of croup. With the exception of a few bronchial rales, the lungs appeared normal.

Treatment.—One-tenth grain calomel every two hours until bowels moved freely; one-half grain quinine sulphate every four hours; tartar emetic and bichromate of potash, each one-hundredth grain, every two hours. External applications of turpentine, one part, and olive oil, five parts. Also had the room saturated with the vapor from a dish on the stove, containing boiling water, to which we added several times a day a teaspoonful of a mixture containing equal parts of carbolic acid, turpentine, and oil of eucalyptus. The next morning I found the patient's condition about the same. Treatment continued.

At 8 p. m. the father came for me (eight miles in a severe snow-storm), saying the baby was in such a low condition that I should probably find him dead when I arrived. Besides my regular medicine bag, I also took a tracheotomy tube and a vapo-cresolene lamp. The little sufferer seemed to be beyond aid, and the end near; nevertheless I succeeded in having him swallow in a few minutes, an emetic of ipecac; erected a sort of tent about the cradle, lighting the vapo-cresolene lamp, and placing it on one side, fixing a newspaper so that the vapor must draw across the child's face, leaving a small outlet on the other side of the tent.

In less than an hour the child became uneasy, and vomited quite a quantity of mucus, and several pieces of membrane, the largest measuring three by one-half inches. This gave him some relief, and the breathing became somewhat freer. Keeping up the vapo-cresolene, I prescribed the dark iodide of lime, one-quarter grain every hour; sulphate of quinine, one-half grain every four hours, and one-half teaspoonful of whiskey every two hours. For nourishment, milk. In forty-eight hours improvement was so marked that the above treatment was stopped, syrup hypophosphite compound and syrup hydriodic acid substituted.

CASE 11 occurred a few weeks later, and was similar to the first one. Profiting by my previous experience, we at once started the vapo-cresolene, and gave quinine and iodide of lime, as in the other case, also a laxative, and turpentine and oil applications to chest and throat. Although he was in a precarious condition when treatment was commenced, he improved so that by the third day we considered him out of danger.

In my opinion the vapo-cresolene was an important factor in the cure of these cases, as well as in whooping cough, having used it considerably in an epidemic, some years ago, with benefit. I think we are prone to change medicines too often in all kinds of diseases, expecting too quick results, and not having patience to give a certain line of treatment a thorough trial. From experience, I find that cases of pneumonia, typhoid fever,

and many other diseases, will do better (with rare exceptions) on a plan of treatment laid out during the first few days, than by daily changing medicines. By this I do not intend to convey the idea to use a stereotyped treatment in all cases, but a careful study of each case at the start, and then decide on a line of treatment, treating complications as they arise.

[N. B.—If the Doctor had used Caroid at the start, *as soon as the membrane showed itself*, the latter would never have formed. The power of Caroid to digest fibrin renders it of the greatest value in diphtheria and membranous croup. When this ferment is applied to the "false membrane" it dissolves and detaches it in a few hours. It destroys the infective organism of the disease by germicidal action, and thus prevents any fresh infection of the system. It causes an almost immediate fall of the body temperature with the simultaneous disappearance of the diphtheritic membranes, the rationale of this being that the organisms which are already in the system soon perish, and (no fresh ones being absorbed) there is nothing to keep up the abnormal fever. It adheres persistently to fibrin. When once applied to the diphtheritic membrane nothing can prevent its being completely destroyed.

Caroid is applied to the membrane in various ways; i. e., 1. In a five per cent. solution every half hour, by a soft brush. 2. Ten grains of the powder blown in throat every two hours with a glass tube. In the *St. Louis Medical Gazette*, for September, 1900, Dr.

M. D. Martin, of Paxton, Neb., states that, in diphtheria "when the membrane will not be dissolved by other applications," he has used Caroid successfully "by blowing in the powder every hour if necessary, being sure to reach all affected parts." One great advantage to be gained by this method, in the treatment of these cases, is, that the Caroid ferment may be used in connection with antiseptics or any of the drugs ordinarily employed in diphtheria or membranous croup.—EDITOR.]

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OPINIONS OF OTHER JOURNALS.

[N. B. The following dissertation on "The Eating Habit" has been clipped from a lay journal; and, although we do not agree with the author in some of the radical assertions made, yet the caustic criticisms in regard to the "gourmandizing" tendency of the modern social function, are so pertinent, that we have decided to publish the article here in its entirety.—EDITOR.]

THE EATING HABIT.

All about me, wherever I go, I find people slaves to the eating habit. The greater part of men's lives is spent in earning the food, the greater part of women's lives in preparing and serving it and in "ridding up" after it. Men and women alike wear themselves out in this service, grow prematurely old and break down in health.

The eating habit is also the source of the principal businesses of the world; the markets and provision stores, fruit stands and candy counters, soda fountains and distilleries, hotels, restaurants, bakeries and lunch counters, trade

in all kinds of eatables and the raising of them. And among the well-to-do the employment of hundreds of thousands of servants is to take care of the food department. And this is not all; scientists study foods, publishers advocate and advertise them, writers devote their time to setting forth their ideas about them, cooking schools teach various theories about them and a great many go to the schools to learn about them.

And this is not all: the queerest part of all this business is that all this tremendous business is not done for the nourishment and up-building of the body, but for dis-ordering, tearing down and ruining it. All this slavery is for the ministering to the pleasures of taste; people do not eat to live, but live to eat, and the sad results of this unnatural living create innumerable other businesses; the professor, the doctor, the surgeon, the dentist, sanatoriums, hospital, nurses and all the manufactures that minister to sickness.

When you get dizzy thinking of all the work eating makes in the world, hold in mind that it is all unnatural, useless and harmful; that it is all done to destroy the body and mind and hinder the development of the human being, wastes our time and energies, prevents us from enjoying the many beauties and blessings surrounding us, shuts us out from the delightful sensations of health and vitality, dulls and warps our minds and perverts our dispositions, causes us to dwell in falsities and prevents us from seeing truth.

In society the prime diversion,

especially on Sundays and at holiday times, is eating; the principal part of every "function" is eating; no matter for what a company of people are called together, there must be eating at some period of the occasion. The greater the occasion, the more elaborate and injurious the eating program. In every association—religious, literary, charitable—in all clubs, secret orders, weddings, the food is the chief charm. An announcement of cocoa and teacakes will bring out a good company in a languishing sewing circle or temperance meeting; a little gathering of friends for a social hour or for games is stale and unsatisfactory without the refreshments. The expense and labor of preparing food prevents sociability, for without this many could have guests and evening socials.

Now, all this would not be surprising among a people destitute of intellect, but that intelligent human beings live in this way, work and entertain in this way, is marvelous. Eating to live is a simple matter and requires little money, labor or time; it builds up body and mind and gives more enjoyment than the everlasting eaters can conceive. The pleasures of eating to please the palate are bitter sweet, for it tortures the body and mind in the earning, preparing and digesting. The eating to live builds body and mind into ever fuller life. Eating to live requires only natural foods and drinks. Grains, fruits, nuts supply all the needed material, but milk, vegetables and eggs add variety that many at first feel the

need of. Water and fruit juices are the natural and necessary drinks.

The amount of food that best nourishes the body is surprisingly little when one eats to live. Air, water, sunshine, exercise and rest are the most important body builders and the best brain builders. Foods that are prepared should be the simplest possible. Foods giving the most vitality are those that are eaten in their natural condition. Dr. Dewey is one of the saviors of the times; by practice of many years he has demonstrated that two meals a day not only give the best results, but correct many disordered conditions. And fasting altogether from food removes many diseases that have defied all other treatment. Many others are advocating that practice now and the future looks brighter for the disease ridden race. One good meal and one light one is the rule, but some take only one meal and find themselves better for it. The first thing noticeable in this practice is a toning up of the whole body and a clearing of the mind; then the sight and senses are strengthened, the taste becomes aware of new flavors in foods not before noticed and there is a relish and after-satisfaction the old diet cannot give. To eat in this way is refreshing instead of clogging. Many who do not know the pleasure or benefit of a good night's rest will find it if they give up the eating habit. Many who only exist, filling up their days with eating, working and sleeping, will be able to live as well as exist when they eat to live. M. NORMAN.

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℞ Caroid, gr. $1\frac{1}{2}$.
Ext. Nux Vomica, gr. 1-5.
Pulv. Rhubarb, gr. $\frac{1}{2}$.
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Pulv. Capsicum, gr. $\frac{1}{4}$.
Sacch. Lac.,
Pulv. Arom., aa q. s.

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INDICATIONS.

Loss of appetite, indigestion, flatulency, hysteria, hypochondria, colic, pains in the stomach, diarrhoea arising from weakness and relaxation of the digestive organs, convulsions, weak stomach, difficult and painful digestion, liver troubles including jaundice, vomiting, seasickness. Lassitude, eructations, dyspepsia, headache from indigestion, sexual debility, etc. Promotes peristalsis through its stomachic effects. It so materially aids the digestion that it furthers the formation of rich blood.

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Cascara Sagrada, gr. 2.
Podophyllin, gr. $\frac{3}{8}$.
Ext. Belladonna, gr. $\frac{1}{16}$.

CHOCOLATE COATED.

Caroid is a corrective of gastric and intestinal irregularities. It is not only a useful aid in checking diarrhœa, but in relieving constipation. Combined with the laxative principles of Cascara Sagrada, Podophyllin, etc., as in "Caroid Laxative Tablets," it produces most excellent results. The fluidity of the bile is augmented, a more generous outflow ensues, and the peristaltic action of the bowels is consequently increased. Caroid Laxative Tablets have been uniformly pronounced by physicians a most desirable combination, for the relief of chronic constipation, especially in women and those who lead a sedentary life.

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To secure convenience and uniformity in administration, we have prepared tablets after a few eligible formulæ, as follows:

R Caroid, gr. $1\frac{1}{2}$.
Sacch. lactis, q. s.

B Caroid, gr. 1½.
Cascara sagradæ, gr. 2.
Podophyllin, gr. ½.
Ext. belladonnæ, gr. 1-16.
Sacch. lactis, q. s.

B Caroid, gr. $1\frac{1}{2}$.
Ext. nux vomica, gr. 1-5.
Pulv. rhubarb, gr. $\frac{1}{2}$.

B Caroid,
Soda bicarb., aa gr. $1\frac{1}{2}$.
Menth. pip.,
Sacch. lactis, aa q. s.

B Caroid,
Charcoal,
Boric acid, aa gr. $1\frac{1}{2}$.
Sacch. lactis,
Pulv. arom., aa q. s.

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[illegible]

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ORIGINAL ARTICLES.

MODERN GASTRO-THERAPY.

As a result of extended research in the fields of physiology and organic chemistry, and the practical application of certain well-known mechanical principles, a rational system of gastro-therapy has finally been established. The physician who keeps abreast of the times and acquaints himself with modern methods at his disposal, may now form very accurate conclusions as to the underlying cause or causes of various disease manifestations of the alimentary tract, and may exercise both dietetic and therapeutic discrimination. He is not obliged to try in a hap-hazard way the effect of this or that drug, in the vain hope that one or the other may chance to give relief, but he may determine (if he wish) the exact nature of the disturbing factor in the case, i. e., the cause of the perverted function—and choose his remedy with a full knowledge of its physiological

effect. Indeed, the resources of the microscope and chemical laboratories have been so utilized during the past decade, in the study of alimentary processes, that the stomach specialist of to-day is enabled to examine the gastric contents with the same accuracy as to its physiological and chemical nature, as has heretofore been done in the case of urinary analysis.

Diagnostic Methods.—Although Prout, in 1824, discovered that the gastric mucus contained free hydrochloric acid, and Schwann, twelve years later, demonstrated the presence of pepsin, it was not until Leube, in 1871, recommended the use of the stomach pump and tube for such purpose that examination of the gastric contents was utilized as a diagnostic aid. Since that time, the elaborate investigations of Hayem and Winter, and the experiments of Ewald, Boas, Hemmeter, and others, have resulted in the establishment of modern laboratory methods for obtaining an absolutely correct

quantitative analysis of the stomach contents. In skilled hands and in a well-equipped laboratory, it is now possible to determine not only the presence or absence of mucus, pus, blood, shreds of tissues, etc., but the presence of an excess or a deficiency of the gastric secretion or its ferments. Tests for the quantitative estimation of "total acidity," free H. Cl., and of free and combined H. Cl. may be given, as well as for lactic acid, pepsin, rennin, proteids and carbohydrates and their differentiation.

Although the method of procedure which has thus far been recommended in these cases savors somewhat of dogmatism, yet it would seem necessary to observe certain prescribed forms in order to obtain uniformity of results. To determine the motor, absorptive, and digestive power in a given instance, it is customary for purposes of comparison to prescribe a test meal, as the Ewald or Boas breakfast, an hour before aspiration—i. e., an hour before the stomach contents are extracted by a Kuttner rubber bulb. (The Boas meal consists of a tablespoonful of oatmeal cooked with water, flavored with salt, and given with enough hot water to make the whole about one quart.) The quantity obtained for examination, (i. e., at the end of the hour) should average about $1\frac{1}{2}$ ounces; a deviation of half an ounce either way indicating an abnormality; e. g., if the quantity is increased, motility or absorption, or both, are considered below normal.

The physical properties of the fluid chyme to be examined are

first noted down—color, odor, consistence, quantity, microscopic appearance, presence of mucus, pus, etc.,—after which it is carefully filtered, or, if too dense, strained through a cloth. The filtrate is then tested with litmus, or a 1% solution of phenolphthalein, to determine its reaction. Next, the presence of free H. Cl is shown by a delicate test with dimethylamidoazobenzol paper, and distinguished from the presence of organic acids by the application of Guntzburger's test. For exact quantitative tests, Töpfer's method is commonly used. Other extremely delicate tests (Uffelmann's, Wesener's, Kelling's, etc.), may be used for the quantitative estimation of lactic, butyric, and acetic acids, as well as for the presence of pepsin, rennin, syntonin, etc. Should occasion demand it, all of the aforementioned data may be obtained; but, in the majority of cases, the following three tests have been found sufficient for ordinary purposes of diagnosis; viz.: 1. Test for free H. Cl. 2. Quantitative estimation of total acidity. 3. Tests for organic acids.

Practical Deductions.—In judging the results of a chemical analysis of the stomach contents, experience has shown that the data obtained in a given case possess little or no value in the *absence* of a clinical history. In other words, it may be said that, as a general rule, they have only a symptomatic value; i. e., "we can tell that there is perverted function and then can rationally supply the deficiency instead of first trying acids and then alkalies." For instance, if

free H. Cl is found above .080 or below .045, it may be considered abnormal; and, likewise, the percentage of combined H. Cl. is considered abnormal unless ranging between .15 and .20. Again, a low total acidity, (less than .50), as shown by low figures for the combined H. Cl. (less than .15) point to a probable deficiency of pepsin. It is sometimes found, however, that a large excess of H. Cl. may coexist with low peptonization—as shown by the proportion of that acid combined with the albuminoids of the food. This only confirms many previous observations, that, in hyperchlorhydria, peptonization is often lessened rather than increased above the normal.

Among other clinical findings of great diagnostic value, the stomach analyst has shown that the uniform and constant absence of free H. Cl. is significant of gastric carcinoma, and becomes fairly positive in the presence of much lactic acid, especially if the latter is found several hours after lavage (followed by a Boas meal) in quantities exceeding 0.2 per cent. However, it is not our purpose here to attempt to enumerate the possible advantages that may or may not be had by the stomach specialist, through his adoption of modern laboratory methods in the diagnosis and treatment of gastric diseases, but to consider briefly some of the more important therapeutic advantages that have been gained by the general practitioner, as a *result* of these experimental investigations.

As one prominent author has pertinently said: "Simplicity of

manipulation, reasonable accuracy of results, and a small consumption of time, are pre-requisites of a good clinical method." This assertion will be appreciated by the busy doctor; who, unless he is a skilled chemist surrounded with necessary apparatus and supplied with many reagents, will doubtless consider the prolixity of detail and delicate manipulations connected with stomach analysis, a sufficient bar to its more general acceptance, and he will for some time to come leave such methods to the laboratory man. But the modern physician fully appreciates the clinical significance of the information that has been derived from microscopic and chemic methods; and such scientific works as von Jaksch's and Simon's "Clinical Diagnosis," and Boas's "Diseases of the Stomach," have met with a hearty welcome at the hands of the majority of the profession. The value of the application of the knowledge of newer methods to the diagnosis and therapy of diseases of alimentation, is illustrated by the greater certainty with which many gastric and intestinal disorders are now recognized and treated.

Of particular interest to the general practitioner are such laboratory findings as are known to bear a fairly constant relationship to certain clinical data. For example, it has been found that an excess of free H.Cl. is usually accompanied by a red tongue of the "dried beef" variety, with its characteristic raw edges which may become the seat of "canker" sores; while, on the other hand,

absence or a marked deficiency of H.Cl. is almost invariably accompanied by the thickly "coated" tongue and foul breath, so indicative of the presence of bacteria and decomposing food material. Again, an excess of free and combined H.Cl. with high percentage of organic acids, has been shown to produce acetic or butyric fermentation, followed by the symptoms popularly known as "heartburn" and "water brash." Other "dyspeptic signs," such as fulness at epigastrium or belching of wind, lasting an hour or more after meals, denote low motor power and too slow evacuation, as proven by the more than normal amount (fl. $\frac{3}{4}$ ij) of the stomach contents obtained an hour after the "test" meal.

Of still greater importance to the physician in active practice, is a knowledge of the chemist's finding, that, in the majority of dyspeptic cases examined, *pepsin is present but inactive*—usually on account of lack of free H.Cl. In other words, it has been demonstrated that pepsin requires an environing acid medium favorable to its action—else it remains inert. To meet these same unfavorable conditions, by administering *more* pepsin, can only result in therapeutic disappointment. The empirical practice so long in vogue—i. e., of prescribing pepsin in any and all cases of indigestion—is thus shown to be irrational, and the reason for the unsatisfactory results obtained is made plain. Furthermore, it has been shown, that, during the first thirty minutes of its stay in the stomach the

food remains *alkaline* or nearly so, and is being acted on by the saliva; therefore the administration of pepsin or an acid at that stage is contraindicated. Not until between thirty and sixty minutes after eating, is salivary digestion arrested; and the stomach then becomes highly acid from the advancing formation of H.Cl.

The folly of prescribing pepsin indiscriminately, has been further demonstrated by direct and positive experiment. In a series of scientific investigations, recently made for the purpose of determining the influence of pepsin and some of the other common drugs upon the gastric functions, Reed, of Philadelphia, arrived at the following conclusion; viz.:—"Pepsin rarely produces any good result when given alone, even to persons with weak digestive power, and often then retards the digestion of albuminoids." (Cf. *Journal Amer. Med. Asso.* Jan. 11, 1902.) Of course, in the first stage of gastric digestion—i. e., during that of the carbohydrates—pepsin has no part, and therefore should not be given in cases of amylaceous dyspepsia.

It will be seen from the foregoing remarks, that one of the important results of modern laboratory methods has been to point out to the general practitioner that low peptonization may coexist with both hyperacidity and anacidity, and that in either case pepsin may be present in sufficient quantity but inactive; i. e., that its enzymotic action depends upon a proper environment. He has learned that the ingested food re-

mains alkaline during the first stage of gastric digestion (when the ptyalin ferment is active) and becomes acid during the second stage—when the pepsin ferment is active if the acidity be normal. He has learned that H.Cl. when found free in the stomach at the end of digestion, is unnecessary and often harmful; i. e., that as fast as formed it should combine with the albuminoids, thus leaving the mixture nearly neutral in reaction when it enters the duodenum. In short, he has learned that, for the gastric chyme to be acceptable to the duodenum, both starch and proteid foods must be liquefied or reduced to fine particles, by the action of two ferments which require opposite environing conditions; and that the process must be performed within a certain time to prevent the formation of organic acids and the resultant fermentation.

Therapeutic Conclusions.—The practical physician may now well inquire, "What shall be done in the way of treatment?" To this we must answer, that, in a limited number of cases (when a deficiency of H.Cl. has been diagnosed), dilute hydrochloric acid may sometimes be given to advantage during the second stage of gastric digestion; but, in the vast majority of cases, it will be found necessary to *aid the digestive process as a whole*, by furnishing a ferment which will act irrespective of its environment (acid or alkaline), and upon all classes of food products (proteids, fats and carbohydrates). The revelations of the stomach analyst at once demon-

strated the folly of looking for such a ferment in the animal kingdom, and the attention of the physiological chemist has consequently been given to a study of the enzymes of the vegetable world. It is now beginning to be realized that the manifestations of disordered digestion, like other disease phenomena, simply announce that a different chemical process is taking place than the one intended by nature. The physician, therefore, is called upon to solve a mixed problem of physics and chemistry.

Darwin first called the attention of the scientific world to the interesting fact that there was a remarkable accordance in the enzymotic action of the digestive secretion of animals, (with its ptyalin, pepsin, H.Cl., etc.), and the secretion of the plant, with its ferment and acid belonging to the acetic series. He demonstrated that digestion is a function of plants as well as of animals, and that the process itself is analogous. Since his time, it has been shown that wherever the enzyme is found, whether in the vegetable or animal world, its action upon complex substances is the same, and is one of the principal elements of what is called "digestion." But, while it has been shown that the *products* of digestion in either case are the same, the environing essentials of the *process* remain constant in one case and not always in the other; i. e., the rapid growth of certain plants, and the change from acid to neutral, and, further, to alkaline conditions, have required the pres-

ence of a ferment unrestricted in its action.

It has been found, however, from experimental investigations, that the same plant or fungus will secrete varying amounts of proteolytic or amylolytic ferments, according to whether proteids or starches are made to predominate in their culture medium—i. e., their food-soil. From this significant fact, the American Ferment Company have further proven that the character of a ferment is largely a matter determined by the environments surrounding its production. As a result, therefore, of many years' investigations and the establishment of experimental stations in various quarters of the globe, their present scientific methods have been adopted for insuring the growth and cultivation of ferment yielding plants and the extraction of their ferment principles in the form of Caroid.

With this vegetable ferment, which acts upon proteids and starches alike, and in any medium (neutral, acid, alkaline), the physician has been furnished an agent which meets the requirements of modern gastro-therapy. Not only is the ingested food, with which it is prescribed, rendered fit for acceptance into the duodenum (within the period described for such acceptance), but, even after its entrance here, the action of the ferment is not inhibited, but rather enhanced, by the presence of the alkaline intestinal juices, and the fluidity of the mixture is still further completed for absorption.

It has been observed, also, that the solvent action of the ferment

is exerted upon the products of inflammation with which it comes in contact (mucus, pus, etc.), and that when such catarrhal conditions exist in a given case the beneficial results following its administration have been speedy and marked. It should be understood, however, that in prescribing Caroid, the object is simply to *aid* the digestive process temporarily, and that such aid may gradually be withdrawn as the natural secretions themselves become furnished in their respective proportionate amounts, as the result of their more favored environment.

THE PREDIGESTION OF COW'S MILK WITH FERMENTS OF VEGETABLE ORIGIN IN THE ARTIFICIAL FEEDING OF INFANTS.

BY GEORGE THOMAS PALMER, M. D.

Former Medical Director of the Trinity Diet Kitchen for Infants, of Chicago; Clinical Instructor in Diseases of Children in the Chicago Clinical School, Etc.

The predigestion of milk for those cases of markedly impaired digestive power has become almost a matter of routine in the physician's work of the artificial feeding of infants. There are a great many cases in which the enfeebled digestion prohibits the exhibition of raw cow's milk in even the greatest dilution, and it has not been the experience of the writer that the sterilized or the Pasteurized milk is any more easily digested. In fact it has been conclusively shown that the application of any considerable amount of heat to the milk makes it harder rather than the more easily digested,

Just as the liquid diet is given to the adult, to tide over a period of weakened digestive power by demanding the least exertion on the part of the exhaustive forces, so these infantile digestive organs must be met in their exhausted conditions with a food that is far more easily digested than the normal. Milk being the normal food of the infant, (and being the food most easily digested) we have but a predigested or a partially predigested milk to turn to.

The digestive ferments of vegetable origin have met with considerable objection on the part of many medical men, largely upon theoretic grounds. It has been held that the vegetable ferments have not yet been isolated in pure form, that they are too feeble in action to be of much benefit and that their action is not definite.

The first objection may be made likewise to the ferments of animal origin, for they have "not been absolutely isolated and consequently their chemical constitution is a matter of conjecture." The second, as to lack of digestive power, is not true, for Gilbert (1) has demonstrated that a full meal of all classes of food underwent complete digestion in a comparatively short time by the action of the vegetable ferments. As to the third objection, it must be considered that there are exceedingly few therapeutic agents so unaffected by surrounding conditions as to be constantly definite in action.

However, the modification of cow's milk is not so exact an art as to make an alleged indefinite action prohibitive of the use of a

therapeutic agent which gives fair promise of elucidating the many of knotty problems which still confront the most able of pediatricians, for what we know of artificial feeding of infants is more than overbalanced by what we do not but ought to know.

While these objections are being raised to the ferments of vegetable origin by those who oppose their use, we must bear in mind that they have advantages which cannot be denied. Clinical experience gives evidence to the fact that these ferments are amply strong, and they have the additional advantage of being active in the presence of either acids or alkalies, or in a neutral medium, and they are not affected by the presence of antiseptics. In fact they are alleged to inhibit bacterial growth, and evidence conclusive upon this point is now being collected from reliable sources.

It is true that the action of the vegetable ferment was formerly held to be solvent rather than digestive, and Sharpe (2) held that it acted by a process of hydration; but the writer is satisfied that if the action is not one of actual digestion it is one so closely akin to it that the practical results are the same. Woodbury (3), years ago, demonstrated, that, by this action, starch is changed into maltose. The action in dyspepsia, in gastric catarrh, in dissolving the membrane in diphtheria or on unhealthy sores or sloughing tissue (4), gives ample evidence of a digestive power worthy of consideration.

More directly bearing upon the action of the vegetable ferments

in the feeding of infants, is the collection of fifty cases reported by Pemberton (5), in which he shows that in almost every case of indigestion in milk-fed infants, the symptoms were promptly relieved by the administration of "Caroid," a preparation made from the Carica Papaya and Brassica-Oleracea. The green and slimy stools, filled with undigested curds, became normal and the weight of the infants (which had remained stationary or had decreased on account of the digestive disturbances) began to show the natural increase.

It was the writer's custom, in the Trinity Diet Kitchen for Infants, and is now in private practice, to begin the feeding of those cases in which no modification of cow's milk was tolerated, by a preliminary fast of twenty-four hours, administering frequently minute doses of calomel and bicarbonate of soda during this interval. Milk greatly diluted and almost entirely predigested was then given for a few days, followed by milk of the same degree of dilution, but not so thoroughly predigested. The amount of predigestion was then gradually decreased while the strength of the milk solution was increased until a milk had been reached closely analogous to breast milk. By this gradual process of increasing the strength of the milk solution, the digestive organs of the infants readily adapted themselves to their labor, and the debilitated condition was overcome.

In almost every case in which a diet unsuited to the child had been forced upon it, digestive dis-

turbances with morbid conditions of the gastro-intestinal tract resulted, and it was found that the ferments of vegetable origin possess a certain therapeutic power in these conditions independent of the simple digestive action, as has been fully shown by Pemberton in the article above referred to.

The method of using the vegetable ferments in the predigestion of cow's milk is usually as follows: Fresh, pure milk is heated until lukewarm and then to each feeding of three or four ounces, 2 grs. of the powdered "Caroid" is added, previously dissolved in a teaspoonful of water. In two or three minutes a curd has formed and this may be stirred, practically reliquefying it. This is then diluted as deemed advisable and fed in the ordinary nursing bottle.

The writer has found it more satisfactory, however, to modify the milk to the desired condition of dilution and the proper percentages of fats, proteids and sugar before submitting it to the action of the digestive ferment. The reasons for this are two: First, because the action of "Caroid" is not only on the fat (aiding in emulsifying it) but also on the sugar, and markedly upon the proteids; thus, by making the modification first, the entire food is given the advantage of the action of the ferment. Second, it is far more convenient to prepare the modified milk for the whole day (as was always the custom in the Trinity Diet Kitchen) and to predigest each feeding at the time it is used. This is necessary on account of the bitter taste acquired by the

milk if the ferment is allowed to remain too long in it before using, although the flavor is not so objectionable as that produced by the animal ferments.

The results with this method of predigestion have, to this time, been eminently satisfactory. The digestive disturbances have been few in number and unimportant in character. The proteids have been retained without difficulty, although the degree of dilution has not been so great as ordinarily used.

While it is not the purpose of this paper to draw comparison with the efficiency of the ferments of animal origin, nor to disparage them in any way, it is certainly true that in the ferments of vegetable origin we have digestive agents of decided value, which have not been fully appreciated by the members of the medical profession, and which certainly deserve a place in the class of active and efficient digestive agents.

References:

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2. Foster's Practical Therapeutics.
3. Mittra, *Medical Reporter*, January, 1894; *New York Medical Journal*, June 9, 1894.
4. Barbour, *American Journal of Medical Science*, April, 1894.
5. Pemberton, *Monthly Cyclo-pedia of Practical Medicine*, January, 1902.

It is a good idea to think twice before saying something mean.—*Ex.*

THE VALUE OF CAROID IN CHRONIC DIARRHŒA AND OTHER CONDITIONS ARISING FROM INTESTINAL INDIGESTION.

BY O. HENLEY SNIDER, A. M., M. D.,
ATLANTA, GA.

The sub-acute and chronic diarrhœas are generally recognized as among the most stubborn and difficult conditions commonly met with in the Southern climate, nevertheless, that they are often dependent upon impaired intestinal digestion, by reason of which the more serious septic fevers and other grave diseases are brought on, is an important fact often overlooked. And the same perverted processes in the intestinal tract not infrequently give rise to the most troublesome constipations; thus presenting symptoms that are the reverse, and necessitating a closer, profound study of the pathology of the case according to its own peculiarities. The logic of the two conditions, directly opposite in appearance yet due to identical causes, will not appear at a casual glance. A study of the morbid process and elements involved, however, will remove doubts on this point.

Fermentative processes of the active intestinal tract, as well as in other portions of the digestive route, give rise to a condition somewhat peculiar to the warm climate, being favored by the effects of an acid excess in the albuminoids and other important elements in the digestive fluids, the result of which is an irritated and swollen state of the minute glandular structures and villi in the delicate intestinal linings.

John C. Dalton, in his "Treatise on Human Physiology" over half a century ago, said: "The process of intestinal digestion forms one of the most complicated and at the same time one of the most important parts of the digestive function." And that same remark possesses abundant truth to-day.

It is plain that while such an impaired state of the digestive process stimulates morbid secretion and excretion, sometimes containing immense quantities of blood and mucous debris, the same primary process will lessen secretion, thicken the intestinal lining and thus set up an aggravating constipation by the removal of the peristaltic stimulus by reason of absorption. In this latter condition, the old and ever growing evil of resorting to the temporary effects of purgatives—thus aggravating rather than removing the primary cause—should be discarded and severely discouraged.

The fact that the auto-toxemias are so likely to result from these conditions, sometimes assuming serious proportions, should add increased interest and activity to the selection of such medicinal means as would logically remove the cause, by correcting digestion.

While no attempt is here made to disparage the almost universal custom of employing antiseptics in these troubles, and while their presence is in most instances probably harmless, yet, used in these conditions proper, prior to approach of septic processes or germ propagation (which will inevitably come on without timely correction

of the evils in digestion) they are without a semblance of advantage.

It should not be forgotten that the process of assimilation and consequent loss of nutrition, are the logical sequence of the perverted digestion here mentioned, and that in the absence of a normally digested material, the lacteals and blood current, as the mediums of distribution, not only become themselves incapacitated for normal duty, but they fail to find the material to convey, and thus the essential element of tissue metamorphosis is not present.

What a pity that we do not more often look at these facts squarely and boldly as in the case of the little, peevish, wasting and emaciated weakling, and having done so, turn our attention to the correction of the digestive function instead of the selection of the kind or quality of the material to be ingested, as is common with us!

The agents heretofore advocated by various writers to aid in the process of digestion are legion, regard being had for the essential condition existing, whether lost vital force, lessened or increased elements in the normal fluids, or otherwise; and, in this respect, the writer has long since learned to place the greatest reliance, in a general sense, upon the virtues of Caroid. This preparation not only prevents discrepancies in the elements of the intestinal juices, but increases the digestive force and activity.

It was only recently that an infant, three months old, placed under my care for treatment, furnished a most unusual but interest-

ing case in this connection, which, with some others briefly reviewed here, may be interesting to the reader; to wit:

The infant boy of Mr. S. G. B., left motherless at eleven days old, and sickly from its birth, had alternate troubles with diarrhœa and constipation, and during the periods of the latter, presented a severely purpuric appearance—great purplish spots showing at intervals on the entire body surface. It was very cross and fretful both day and night; one doctor being called to see the child during the worst of an attack of constipation, remarking that it had the “colic”, and he left after instructing that oil be given.

Various artificial foods were tested alternately, after having first fed cow's milch, in the hope that this would correct the trouble. The only relief, even in a temporary way, however, was gotten from broken but frequently repeated doses of calomel (whether bowel was loose or constipated) thus stimulating digestive functions for the time, but offering nothing definite. Pepsin in its various forms and combinations was also resorted to at times for the troubles manifest in the process of digestion in the stomach; but all of these proved worthless. The results obtained from the administration of Caroid, in some past cases almost similar in essential features, now occurred to my mind, and the little patient was given half grain doses of the Caroid Powder at intervals of four hours. The results were most gratifying, i. e., stimulating digestion in the bowel,

and showing marked improvement generally, on the third day.

J. T. L., a carpenter, 46 years old, called for treatment of an acute diarrhœa that followed the effects of a dose of compound cathartic pills, stating that he became so costive that he would go for even a week without a fecal passage unless he took a purgative dose of some sort. Moreover, from a day or so after the flow from bowels stopped (which might last a week or more, and sometimes weakened him severely) he would suffer untold agonies with headache, until the bowels again acted freely. He stated that there was no pain or griping during the attacks of diarrhœa, and that he ate heartily enough, feeling fairly well, except lassitude, drowsiness and a prominent soreness and tenderness along the transverse colon.

This patient had at the time a sub-acute colitis and had been treated for “catarrh of the rectum”, etc. Another physician had recently told him he had an abscess of the bowel, pointing out as its location the descending colon at about its lower third. But one prominent symptom in this case was the passing of food from bowel, during the diarrhœal periods, that had been eaten only a few hours previously.

This patient was given 5 gr. doses of Caroid shortly before meals and bed time, and improved from the first few doses. Within the ensuing month digestion and peristalsis were natural.

Both of these patients gained rapidly in strength, the red blood corpuscles being markedly increas-

ed. The general physical appearance of the patient rapidly became natural, with refreshing sleep.

In the case of the child, the Caroid seems to have stimulated hepatic activity by metabolic influences, and not in any way influencing biliary function direct.

That Caroid possesses marked advantages, in cases of fermentation within any part of the route of digestion, is a fact beyond controversy among those who have used it; and these advantages seem to come from its general stimulating and tonic properties over organic structures, rather than from a mere neutralizing effect over quantitative fermentation of the gastric and other digestive fluids, though its value in the latter respect especially in fermentative dyspepsia, will not be disparaged in the least here.

The writer has given Caroid to pregnant women, with the result that the most intense reflex morning sickness and anorexia were overcome, while the unpleasant symptom usually mentioned as "heartburn" was also entirely overcome. But as it is not possible, in a short article of this character, to enumerate the many advantages possessed by Caroid, in correcting morbid conditions of the alimentary canal, especially those peculiar to the summer months, depressions from heat, etc., we will simply conclude with the bare statement, that it has thus far served our purpose admirably in all cases of the kind enumerated, in which it has been prescribed.

—:o:—

Most remedies for prejudices seem to be fatal,—*Ex.*

EDITORIALS.

ROTTNER'S WORKING FORMULÆ.

In the last previous number of the REVIEW, we engaged to furnish our readers with certain "working formulæ" for the home preparation of a variety of predigested foods, such as could be utilized by the patient himself, enabling him to prepare simply and economically, his own predigested nutriment freshly made at the home. We are pleased to announce, that we have succeeded in obtaining from their author permission to publish some of the more important of these formulæ in the present issue.

As may be remembered, the Original Essay, "Home Predigestion of Food," which appeared in our July number, was from the pen of Dr. Chas. S. Rottner, of Philadelphia, who presented therein the history of an interesting case of "gastro-intestinal catarrh;" in the treatment of which, surprisingly satisfactory results were obtained, without the use of drugs, simply by furnishing the patient, for three months, with predigested proteid and carbohydrate foods, freshly prepared at the time of each feeding—as in the manner hereinafter described.

Dr. Rottner had found that the ordinary methods of treatment, with antiseptics, digestants, gastric sedatives, etc., proved of little avail.

"So long," says he, "as my food remained in the intestinal tract, it caused constant and most distressing pain." He resolved, therefore, to adopt an entirely different course. What he set out to accomplish was to prepare a predigested food that would be quite equivalent to a regular meal. He knew well that none of the various liquid foods in the market could take the place of regular diet for any period of time, and yet it was necessary that his patient's stomach be given a rest and that nourishment be sustained. He recognized, that, to overcome any diseased condition, bodily strength is necessary; and it was his purpose to supply this strength. Which he did!

Says he: "How nourishing the albumen of meat fibre is! Yet my patient had been able to swallow only the juice of the meat [containing useless 'extractives']. The fibre irritated and pained, no matter how well it was cooked. Yet I wished my patient to have three ounces of meat at his noon-day meal."

After trying to digest the meat with pepsin—a process which he found to be most "tedious and unsatisfactory," inasmuch as it was impeded by the products of its own action, requiring much liquid, frequent agitation and close attention, as well as a certain temperature to be maintained—the Doctor turned to Caroid, and was

pleased to find that by its action, cooked and ground meat was completely reduced to a pulp in less than an hour's time; and, furthermore, that temperature did not seem to be of any consideration. He was not a little surprised to find that meat was digested at ordinary living-room temperature. Consequently, the most inexperienced person could prepare, with the use of Caroid, the meat which he was so anxious his patient should have. The manner in which this meat was rendered palatable and served (as well as the preparation of various other foods) will be found outlined in the formulary "Directions" appended below.

As stated elsewhere, we believe that this investigation begun by Dr. Rottner, in the matter of home predigested foods, opens up a new and wide field in practical dietetics, which cannot but prove of especial interest to every practitioner of medicine. If the "bankrupt" and "worn-out" stomachs, daily met with, and requiring rest and recuperation, can be provided with this latter requisite in so simple and effective a manner as here pointed out, then our "modern gastro-therapy" has been furnished a means whose practical utility can hardly be overestimated. Albuminous food, predigested, yet containing all the constituents of *fresh* material, will be hailed as a boon by many sufferers, for whom

aid is thus provided in tiding over a period of gastric insolvency. That a food, thus freshly prepared, is chemically superior to the various proprietary canned infant- and invalid-foods on the market, will be readily appreciated by every physician who has had clinical experience with the ill-effects resulting from the continued use of *preserved* foods. Again, this home preparation insures variety and different degrees of conversion—a fact of no little significance in treating the various digestive disorders as they occur in actual practice.—[See Dr. Rottner's "working formulæ" which follow.]

**DIRECTIONS FOR PREPARING
PREDIGESTED FOOD FROM
FRESH MATERIAL.**

**ESPECIALLY DESIGNED FOR CHRONIC IN-
DIGESTION.**

To Prepare Rice.—Take of rice a convenient quantity. Weigh it and boil in a farina boiler for two or three hours. Then break up the grains by beating, or better, by passing through a colander. Now take of Bana-Diastase (The American Ferment Company) an amount proportionate to 3 grs. of diastase to 1 ounce of rice, and dissolve in a small quantity of water (a dessertspoonful); add the solution to the rice, which must be kept warm, but not *hot*. Place the rice on the back part of the

range, so that a temperature will be maintained at which the rice is uncomfortably warm to the touch, yet not so hot that it will burn the fingers. Careful attention at this stage is not necessary, for the diastase continues to do its work if the temperature is within ten degrees of this point, either up or down. In about two hours' time the rice will have so softened and changed that it will be very acceptable to the stomach and very pleasant to the taste. Season with salt, sparingly, and a little cream may be added if desired. The rice thus prepared may be eaten cold or hot, according to the preference of the patient. It is quite palatable either way.

To Prepare Beans or Peas.—First boil in the usual manner until soft. Then break up the grains by beating or passing through a colander. Then add to each ounce of beans, or peas, so prepared, one grain of Caroid Powder and two grains of Bana-Diastase, previously dissolved in a dessertspoonful of water. Stir the combined ferments well into the mashed beans or peas, and place same at the back part of the range where it will be kept warm (not hot) from one to one and a half hours, after which it is ready to be eaten, either alone or in combination with other materials, as hereinafter described. Beans or peas require the double action of proteolytic and starch

converting ferments, as they are the process, consequently he abandoned the Pharmacopœia method well as starch. for the following:

Preparation of Meat.—Take $\frac{1}{4}$ Break a fresh raw egg into a pound of prime, fresh meat, free saucer and stir with a spoon—the from gristle and fat. Cook same white and yolk intermingling, the by boiling or broiling (boiling is white retaining its identity through preferable) adding no salt while the mixture as broken-up, yet cooking. When cooked, chop the thick and stringy matter. After meat fine and add to it 5 grains of stirring the egg, add to it two Caroid, previously dissolved in a grains of Caroid, stirring same dessertspoonful of water. Mix thoroughly into it. The yolk is thoroughly and allow to stand for at once changed into a limpid one and a half hours in a warm liquid, and soon, though not so room. At the end of this time the quickly, the albumen is completely dissolved and changed, all this meat will be reduced to a pulp and at a temperature of from 70-80 degrees F. At 125 degrees F., Caroid will become somewhat bitter. By acts on raw egg with surprising bitterness will be removed. Save rapidity. the liquid in which the meat is There are many ways in which cooked and boil it down to $\frac{1}{3}$ its eggs so prepared may be eaten. original volume, and keep for A raw egg so treated and slightly future use. salted is not unpleasant to the

To Predigest Eggs.—Dr. Rottner palate. They may be added to a states that to find a suitable method soup, or may be poured upon dry for predigesting egg was the hardest toast, or mixed with prepared task that he had to encounter, rice, etc.

but with the following plan the *Predigested Egg Toast.*—Upon two labor was reduced to a minimum. pieces of toast, placed in suitable dish, still hot, pour two eggs previously digested with Caroid as above described. Now place the He first tried the Pharmacopœia dish and contents in a hot oven method of boiling the eggs until and allow to remain about three minutes, or until hot. Rich milk, quite hard and then passing both heated until hot, may now be poured the yolk and white through a colander and adding Caroid. This on the toast, when it is ready to be eaten. The milk cannot be process, though successful, was mixed with the egg, nor allowed attended with considerable trouble. Success was only attained by keeping up a comparatively high temperature and devoting much care to

to stand upon the toast for any length of time, because the unspent strength of the Caroid present, acting upon the casein of the milk makes the entire dish bitter. If eaten immediately the milk will be partially peptonized, but it will not be bitter.

Dr. Rottner is enthusiastic regarding this method of preparing eggs. He says that he is certain from his experiments that eggs prepared in this manner will be tolerated by the most delicate stomach and will not cause the biliousness which often results from eggs prepared by old methods.

Predigested Dessert.—Slice a loaf of bread. Dry it after the manner of making zwiebach, then grind and moisten the bread crumbs with water, adding Bana-Diastase in the proportion of three grains to the ounce of bread crumbs. The Diastase should be previously dissolved in a dessertspoonful of water. Place the bread crumbs on the back part of the range (the same as in the case of the rice) where a temperature can be maintained at which the bread would be uncomfortably warm to the touch, yet not so hot as to burn the fingers. Let it stand at this temperature for two hours. Care should be taken that the bread is not browned in drying. The finished product will be better if it is not browned. Whole wheat bread

for drying is usually liked better by patients than ordinary wheat bread.

PREDIGESTED FOOD.

DIET FOR ONE DAY.

Breakfast.—The patient is generally satisfied with a bowl of predigested rice or a bowl of bread crumbs which have been subjected to the action of Diastase and served with cream, as elsewhere described. Fruits will generally not be tolerated by the class of patients for whom predigested food is required, although in some cases the acid of the orange may be taken, but not the pulp.

Dinner.—This may consist of a combination of proteids, predigested as above described, such as beef, mutton, fowl or egg, with starch food, such as rice, beans, peas, etc., in the form of thick or semi-soup, which is eaten with a spoon. Three ounces of meat is the average quantity used for such a meal. The flavor of this combination is greatly improved by boiling down the liquid in which the meat is cooked to one-third its original volume and then adding to the mixture. The flavor is further improved by adding to each portion one teaspoonful of Armour's "Vigoral," or any good liquid extract of beef.

Dessert With Dinner.—Bread crumbs prepared as elsewhere described and served with cream. At

times dessert may be served with a little good jelly or jam, but the latter should be eaten sparingly, where there is a tendency for cane sugar to ferment in the intestine. The agreeable sweet taste of the predigested bread crumbs is due, of course, to maltose, which is readily assimilated.

Supper.—For supper, one or two eggs predigested as directed, may be used in the above mixture, with starch foods in place of meat. Rice forms the best starch food for use in this mixture for several reasons. The taste of barley when acted upon with diastase is insipid. Corn starch and wheat starch are changed to liquids by diastase, and neither of them taste nor look appetizing. Rice contains about seventy per cent. of carbohydrates.

After a time the food may be peptonized and converted less, and more solid food given, care being taken by experiment to ascertain what the stomach will bear. It is in some cases, however, a matter of months. It must be remembered that the business of the stomach was bankrupt, and it must be built anew by the slow process of accustoming it by degrees to normal work and activity.

If some men were able to make money as easily as they make trouble, their wealth would soon become burdensome.—*Ex.*

CAROIDIZED EGG.

Physicians who are already familiar with the method of Caroidizing raw milk in infant, and typhoid-feeding (for the purpose of preventing the formation of indigestible curds), will be much pleased to learn of Dr. Rottner's discovery that raw egg may also be predigested in a similar manner, simply by adding two grains of Caroid to an intermixture of the "white" and yolk, stirred briskly together at a slightly elevated temperature. The simplicity of the operation must commend itself to all who have had experience with the troublesome Pharmacopœia method of digesting egg albumen. At the same time, the greater therapeutic value of the Caroidized product, as an invalid-food, will be readily appreciated.

That cooked albumen is rendered tough, and is attacked with difficulty by the gastric secretions, is well known to the physician; and is made evident even to the patient himself, when hard white chunks from a boiled egg are vomited just as they were swallowed in mouthfuls at breakfast five or six hours previously. A poached or soft-boiled egg is of course dissolved more readily by the gastric ferments; but, even in this semi-solid state, it is often found that the disordered stomach is unable to perform its part in peptonizing it and rendering it fit for absorption.

Especially is this true in gastro-intestinal catarrh, anæmia, typhoid fever and many other wasting diseases.

Some patients aver that eggs always make them "bilious", and, therefore, they never eat them. This widely current belief is not altogether mythical, since it is well-known that any food which is digested slowly and with difficulty, remaining long enough in the alimentary tract to decompose or set up fermentation, will result eventually in producing symptoms popularly ascribed to "biliousness". Many people have the same aversion toward drinking milk. Both of these foods, however, are highly nutritious, and can be made acceptable to the delicate stomach of the weakest invalid, simply by adopting the plan recommended by Dr. Rottner. Take our advice, Doctor, and try Caroidized egg in the dietetic treatment of the next case under your charge, which you think would be benefited by it.

A VERY SERIOUS CASE.—Late one evening a doctor received a note from a couple of fellow practitioners saying: "Pray, step across the club; we are one short for a rubber." "Emily, dear," he then said to his wife, "I am called away again. It appears to be a very serious case, for there are two doctors already in attendance."—*Ex.*

HOME MALTING OF CEREALS.

It will be observed that, in selecting a diastasic agent for the purpose of predigesting rice, peas, beans, and other carbo-hydrate foods, Dr. Rottner has given preference to the comparatively new digestant,—Bana-Diastase. The advantage of this ferment over the various malt preparations in the market would seem to be twofold; viz.:—1. Its more convenient form. 2. Its greater amylolytic strength. While "malt extracts" have a diastasic value of from 1-1 to 5-1, Bana-Diastase has a strength to 150-1; i. e., it will convert 150 times its own weight of starch. For every ounce of convertible material (rice, cereals, etc.) three grains of the ferment are required—"previously dissolved in a dessertspoonful of water."

In order to present Bana-Diastase in the most practicable form for use (as in malting cereals or converting them to sugars), the manufacturers have prepared and inclosed it in convenient peptonizing tubes, as follows; to wit: A measured quantity of the ferment, sufficient to malt an ordinary portion of food required for one meal, is put up in air-tight sealed tubes made of light flexible material.

BANA-DIASTASE

To use a tube, all that is necessary is to cut off one end and

empty contents into the food to be converted. "Caroid Peptonizing Powders" are furnished in the same style of package.

It has occurred to us that a diastasic ferment, furnished in this convenient and inexpensive form, may be utilized in various ways. For instance, if the physician is asked why he uses "malt extract," he says it is on account of its "food value" as well as its diastasic property. But, in "malt extract," we simply have a preparation of starch converted into maltose and sugar. Why is not starch, predigested with diastase, practically the same thing, albeit not so condensed perhaps as the "malt extract"?

The latter is generally employed by physicians for its food value. No malt extract, however, contains sufficient diastase to make it worth considering as a starch converter. Malted cereals are practically the same thing as extract of malt. By the use of a preparation of powerful diastase, such as Bana-Diastase, the cereals such as rice, rolled oats, wheat, hominy, barley, etc., may be wholly or partially converted to maltose as desired. Partial conversion of the starch is at times a distinct advantage, inasmuch as the stomach should be allowed to do all the work that it is capable of doing. While perhaps home malted food cannot in all cases be substituted for malt extract, it is infinitely superior in most cases. The value of the diastasic ferment as a therapeutic agent in the treatment of alimentary diseases will be better appreciated when we remember that the normal ratio of the carbo-hydrates to proteid foods in the average daily diet is nearly four to one. Thus, reasoning from analogy, it would seem fair to infer that a vegetable ferment, which effects the transformation of the carbohydrate material into diffusible and assimilable forms, has a place of scarcely less importance than that of a proteolytic ferment. While this inference may not be strictly true, yet we know that Bana-Diastase transforms starch into maltose, and that the diastasic secretions of the body effect the same transformation; that, as maltose, the carbo-hydrates are absorbed into the blood of the portal vein and conveyed to the liver, where it is dehydrated back to its original condition as starch, or more properly "glycogen," which again by the action of diastase is converted into diffusible form and utilized throughout the body in the production of heat, force, fat, and structural growth. Moreover, as one writer says, "it is now conceded that diastase is constantly present in the blood, lymph, tissues and fluids of the body, and further that, wherever a lessened

activity of the ferments of the blood occurs, diminished power of resistance on the part of the economy in general is certain to follow."

If the above line of argument holds true, it would seem to us that an important indication for the use of the diastasic ferment, is in those conditions, where the abeyance of function of the secretory glands is one of the most pronounced symptoms,—as in prolonged convalescence from febrile attacks and in all wasting diseases. We conceive, therefore, that, in all these cases, carbo-hydrate foods predigested with Bana-Diastase either alone or combined with proteids Caroidized in the manner recommended by Dr. Rottner,—must eventually serve as an important dietetic aid to the physician in any really effectual treatment established.

—:o:—

INCONVENIENCE OF KNOWLEDGE.

First medical student: "What's worrying you?"

Second medical student: "You know I am desperately in love with Miss Beautie."

"Yes, and I have noticed lately that she has a sad, dreamy, soulful expression."

"That's it. I don't know whether it's love or her liver."—
Ex.

CRITICAL REVIEWS.

DR. ANDERSON'S DISCOVERY.

At one of the weekly conferences of heads of departments, visiting botanists, etc., held recently in the museum building of the New York Botanical Garden, Dr. Alexander P. Anderson, curator of the herbarium at Columbia University, read a paper in which he gave an account of his discovery of a new (dry) process of cooking cereal grains and starchy products, by means of which they would be rendered not only less expensive but much more digestible. It is believed that this is one of the most important discoveries in economic botany advanced in recent times, and that it will undoubtedly have a very widespread application to the food of mankind in this and other countries.

Realizing the importance of investigations along this line, Dr. Anderson began in the spring of 1901 a series of experiments on the effect of temperature of 100 degrees and above on the cereal grains, to determine what effect dry heat under different conditions would have on the starch granules. In the course of his experiments and study of the theoretical structure of the starch granule, he finally discovered a method by means of which starch granules of all kinds as well as starchy seeds and products could be expanded and broken up without the use of water from the outside which is customary in the conversion of starches into pastes in the ordinary cooking process with water.

Instead of adding water, Dr. Anderson is able to effect the complete swelling of the starch granule by means of dry heat. This he does by subjecting the starch granule, grain, or starchy mass to a rapid heat in a saturated atmosphere. At the end of the process the starch granules are broken up into an innumerable number of particles or fragments. The resulting products after the expansion are dryer than before, on account of the loss of water which escapes at the time of the expansion. It is found that in this way any starchy product, especially the cereal grains, may be made to swell or expand. When the grains are swelled the resulting products are from four to sixteen times greater in volume than the original kernel. The expanded kernels are only enlarged, otherwise exact copies of the original.

At the time of the expansion they become white, porous and bread-like, and on account of the rapid heating and comparatively low temperature the greater proportion of the starch remains unchanged, excepting in that it is broken up into fragments as before explained, not being altered to any extent chemically. Some dextrin is formed, especially when the heating is prolonged and at higher temperatures.

When air-dry powdered starches, like corn starch, tapioca flower, sago flower or starchy preparations like pearl sago and pearl tapioca, are treated, the resulting swelled dry white masses become enlarged copies of the original, which increases in volume from six to nine

times. When pure starches are thus treated and expanded, and the resulting dry products afterward placed in water, they go into suspension, forming a starch paste similar in every respect to one formed by boiling starch in water.

The only difference between starch paste or starchy food products prepared by the ordinary methods of boiling or cooking with water and the dry method of expanding them is that the resulting products expanded when dry can be kept indefinitely in their dry condition, while the products prepared with water easily spoil and ferment when not afterward sterilized and kept in closed vessels.

The dry method is simply a dry cooking process, where the air dry starchy products and air-dry cereal grains are taken and, after a short period of heating in a saturated atmosphere, at a temperature not exceeding that of the baker's oven, come out in a dry state, thoroughly and uniformly cooked, as well as absolutely sterilized.

After reading the paper, Dr. Anderson passed around among the audience, for inspection and tasting, dishes of specimens of the products treated by his process, including wheat, rice, buckwheat, pearl barley, pearl sago and tapioca, together with samples of the raw grains. The treated products were immensely expanded, but all retained their original shape, and all quickly dissolved in the mouth.

The pearl sago, especially, simply melted away. Wheat and buckwheat gave a little opportunity for mastication, and had a pleasing flavor.

Dr. Anderson says that his process may be varied to produce a great variety of flavors with any given cereal, by regulating the degree and duration of the heat applied. The products can, of course, be salted or otherwise seasoned or artificially flavored either at the time of the process or afterward, to suit individual tastes.

Pearl barley, once treated, is all ready to be used for thickening soups and would be palatable with cream or milk. The expanded rice grains could be prepared like salted almonds or sugar-coated as a confection, or placed in hot milk would be ready as a table vegetable or for invalids' food.

On account of their great digestibility it is believed that the products of the new process would have a very high value simply as foods for invalids and dyspeptics. It is also declared that most of them would form ideal foods for infants.

By the saving in the amount of starch ordinarily wasted a large addition is made it is said, to the nutritive value of the foods, and a saving is thus effected in the amount required for proper sustenance.

It is further pointed out that the keeping qualities of the dry-cooked products, which are averred to be equal to the raw grains under the same conditions, together with their compressibility when desfred into very small compass, particularly fit these foods for ship stores, army supplies and the use of travelers, explorers and others in such regions as the Klondike.

A suggestion was made by one of Dr. Anderson's hearers that the discovery was likely to go a long way toward solving the vexed question of concentrated food in emergency rations for soldiers. It is said that the products could be put upon the market cheaply, the expense of the process being less than that of the ordinary methods of cooking.

Physicians will readily appreciate the value of starchy foods thus prepared. Potatoes when baked are known to be much more digestible than when boiled, owing to the explosion of the starch granules by dry heat and the dissipation of the water from their interior. Thus, air-dry wheat starch loses 19, rice starch 17, potato starch 22 per cent. of water when dried at a high temperature. We predict that fewer cases of amylaceous dyspepsia would be met with if Dr. Anderson's dry process of preparing starchy foods should eventually come into vogue; while, as an "invalid food," they would become even more valuable if prepared according to the method recommended by Dr. Rottner on a previous page. In other words, if the cereal grains or other starchy foods (with their water extracted in this manner) were utilized in the home preparation of predigested foods, an almost *ideal* food for the invalid would be secured.

—:o:—

Gladys—Why is it that ministers usually marry so young?

Harold—Oh, that's the only game of chance they're allowed to play.—*Ex.*

RECITAL OF CASES.

CONSTIPATION.

The American Ferment Company.

GENTLEMEN: I wish to report a case of gastric ulcer complicated with bowel trouble, in which Caroid acted like a charm.

Mrs. M., aged 38, German woman, mother of twelve children, three years ago had la grippe, which settled in stomach, and from then on patient suffered great distress after each meal. Past year pain was constant, and she would frequently vomit up bile and blood and undigested food. Spot in pyloric region of stomach very tender indeed. Had been to many physicians for relief. Was very weak and nervous and poor. Came to me in November, 1901. Diagnosed case as ulceration, with catarrh of the stomach and bowels. Bowels moved only with large doses of physic, and then feces were in round balls.

I put the patient in bed for one week, and as mobility of stomach was fairly good, put her on milk diet for one week. Ordered following treatment: Large colonic flushings until all accumulations of feces were removed. First thing each morning, glycozone, 3 j, followed in five minutes with warm water $\frac{3}{4}$ viij. Followed this in half hour with nitrate silver solution—gr. $\frac{1}{4}$ of silver to 3 j of distilled water. Milk every three hours, $\frac{3}{4}$ viij, and twice each day the white of one egg with the milk. For acidity I ordered:

R Sugar of milk,
Soda bicarb.,
Bismuth sub. carb., aa $\frac{3}{4}$ j.

M. Sig. One-half teaspoonful, to be repeated every thirty minutes until pain stopped.

At the end of one week all vomiting and pain had stopped, and I ordered gradual return to solid food diet, and ordered one Caroid Tablet, 2 gr., plain, after each meal, for a week. Then increased dose to two tablets after dinner.

Patient made a rapid, uneventful recovery, bowels moving regularly, and health and strength returning like magic.

I give this case, as most physicians would be afraid to use Caroid in ulcer. But as Caroid corrects fermentation, and disintegrates the solid food for the fluids in the stomach, allowing the fluid to pass off readily, thereby relieving the stomach of its weight, you can readily see the advantage of its use. By preventing bowel indigestion, Caroid causes bowels to move naturally, and as there is no delaying in the passage of the intestinal contents, all toxic symptoms are relieved, and sleep is assured.

The day will soon come—in fact, is now here—when instead of physic, the intelligent physician will give medicine to correct the bowel indigestion. Such a drug as will accomplish this great end is Caroid, and I know of no other drug that will do it, although I hope that such drugs will be forthcoming.

In most cases, constipation means "intestinal indigestion." Caroid will stop this, so why give physic? Let my brother physicians

think on this and try Caroid. If it fail them, count me as a bad adviser; if it succeed, use it to the betterment of humanity.

Truly yours,

LOUIS M. COON, M. D.,
Arion, Iowa, Jan. 21, 1902.

NOTE: We scarcely think that the majority of cases of constipation can justly be attributed to "intestinal indigestion" as the prime etiological factor; but, on the other hand, we do believe that very many cases of intestinal indigestion are primarily due to constipation itself. But, whichever of the two may be considered as the original cause in a given case, they are almost always found accompanying each other, when the patient finally presents himself for treatment; and any remedial measure employed, which gives relief to the one condition, usually proves beneficial to the other also. It is for this reason, we conceive, that a ferment of the nature of Caroid so often gives marked relief to the sufferer from constipation. Judging from experience, however, much better effects will be obtained by combining the Caroid with well-known cholagogue agents, as in the following form of "Laxative Tablets;" viz.:

Caroid, gr. j.

Cascara sagradæ, gr. ij.

Podophyllin, gr. ʒ8.

Ext. belladonnæ, gr. ʒ̄.

Sacch. lactis, q. s.

The above tablet is now being extensively employed in cases of habitual constipation and with most excellent results. It has been found that the cholagogues prescribed in the above combination

prove much more effective when given *with* Caroid than when given *without*. This is doubtless due to the solvent action of the ferment which cleanses the alimentary mucous membrane of catarrhal and fermentative products and thus allows a freer absorption of both food and drugs.—[EDITOR.

GASTRO-ENTERIC CATARRH.

The American Ferment Company.

GENTLEMEN: After perusing your pamphlets sent me, and noting the formulas of each tablet put up, I am very favorably impressed with same. But before going farther, I wish to ask you if you can furnish the laxative tablet and omit the Caroid, for the reason that in some cases the laxative only should be administered at bed time, and again maybe every other night would be sufficient, yet the digestive properties of the Caroid (plain) can be given after each meal.

I have in mind two cases—both of several years' standing—the first a male, 35 years old and married. To be brief: the case started with a very distended feeling in stomach and bowels immediately after eating, and a peculiar nervous fear that death was going to ensue. Jaws had sensation of stiffness; nervous and brain confused, yet patient was rational. Complained of undue pressure in cardiac region, as well as heart intermitting, i. e., only when stomach was distended with gas. No belching occurred at this time. Usual remedies given, but patient did

not improve much. Sour risings occurred soon after meals and continued for from three to four hours, alternating with gaseous eructations. All preparations of pepsin were given, as well as other remedies, but only offered slight temporary relief. Bowels became torpid, sluggish; sleep poor, and gas expelled both by mouth and rectum in great quantities; appetite remained fair, except at times when it became abnormal; again a slight nausea, yet never sufficient to vomit. Patient is of a highly nervous temperament, yet does not complain of nervousness only when stomach is distended and in a fermented condition. Stools of a pale clay color, denoting a torpid and inactive liver.

The female, while a few years older, presents the same symptoms, except that possibly more cramps occur, owing to the excess of gas in the intestines.

But the whole trouble begins in the stomach, as soon as food is partaken of, and then I have them on very light diet.

Now as the two cases mentioned have resisted all other ferments, and as your preparation is a new one, perhaps you can outline a better method to use your Tablets than I will be able to do, unless I experiment for some time with it, and in these two cases, I should certainly like to effect a speedy and permanent cure, for they have suffered terribly, even though all known remedies were tried in vain. Kindly give me your opinion as to course to be pursued *for results*, and if remedy succeeds in cases

mentioned we certainly can do business with your preparations.

Thanking you for the pamphlets,
I am, Yours, etc.,

_____, M. D.,
Harrisburg, Pa., Feb. 1, 1902.

[The following was sent by the manufacturers in reply to the above—EDITOR:]

“DEAR DOCTOR: Replying to yours of the 1st inst., we beg to say that we do not furnish the Laxative Tablet ingredients without the Caroid, for the reason that they are obtainable from any of the tablet manufacturers, and in forms other than in tablets at any drug store. Caroid is combined with Cascara for reasons other than the digestion of food immediately after being eaten. It is our claim that almost any medicine administered internally will act better in the presence of Caroid than otherwise. (See reasons given in answer to Dr. Bentley, ALIMENTARY REVIEW, No. 3.)

As we are not physicians, we will send your letter to the editor of the ALIMENTARY REVIEW, who can probably give you some advice in the case referred to. Of course, Caroid in tablets—plain or in combination—or in powdered form, for indigestion, should be given with or after each meal.

Yours very truly,
THE AMERICAN FERMENT CO.,
Jersey City, N. J., Feb. 3, 1902.

NOTE: In a previous number of the ALIMENTARY REVIEW, Vol. 1, No. 1, p. 24, we published a clinical article, on “Caroid in Intestinal Indigestion,” written by E. E. Lewis, M. D., Port Huron,

Mich., (Cf. also *Medical Summary*, Oct., 1900), in which the author reports the history and treatment of a case, manifesting symptoms very similar to those described above by our correspondent. Dr. Lewis states in his article that he felt certain that his patient "had previously been in good hands, and that all of the ordinary forms of treatment had already been resorted to." He decided, therefore, "to test the claims recently made for the vegetable digestive ferments as represented by Caroid." He wished especially to test their quality of acting regardless of media, or rather of acting in all media, thus insuring certainty of results throughout the whole digestive tract. He says:

"I considered the case one particularly well suited for such a test.

The only preparation at the time available chanced to be tablets of the following excellent combination:

℞ Caroid, gr. j.
Charcoal,
Acidi borici, aa gr. iss.
Sacch. lact., q. s.

I ordered two of these tablets to be taken immediately after meals, and, after the second day, the results were so strikingly satisfactory—being noticed by the patient as well as her family—that I decided to continue with the treatment,—since which time I have heard nothing but encouraging results. Although less than a month has elapsed since the beginning of treatment, my patient can eat with impunity almost any kind of food that she desires. The pain in the epigastric region, of

which she had so long complained, has entirely disappeared. She has no belching; no accumulation of gas nor distention of the stomach; in fact, she is, as she states, 'perfectly well.'"

Again, on page 29, of the same issue of the REVIEW, the following case was reported:

"Dr. W. T., æt. 40, came to me for treatment for, as he claimed, 'heart disease.' Examination revealed a weak and what is sometimes called 'an irritable heart,' which had not been improved by a long continued use of digitalis and other cardiac remedies. That the heart, however, was not the only, nor even the principal organ affected, was indicated from the symptoms and history of the case, which pointed unmistakably toward the digestive tract. The greatly distended abdomen, pain in the epigastrium after eating, vomiting, alternating constipation and diarrhœa and regurgitation of food, all were plainly diagnostic of gastro-intestinal catarrh.

Believing that the food ingested became only partially dissolved, the undigested residue remaining as a foreign body to serve as a source of fermentation and excite irritation in both gastric and intestinal cavities, it was considered advisable to prescribe a remedy which would not only remove from the membranes the abnormal secretions formed, but which, as a digestant, would perform the functions of the natural ferments. It was deemed essential also to clean out the intestinal tract with the aid of an effective cholagogue agent. Caroid (gr. iij) was there-

fore administered immediately upon rising in the morning, followed in about an hour and a half (shortly before breakfast) by a liberal dose of sodium phosphate. Directly after each meal during the day, Caroid (gr. ij to gr. iij) was given.

The above method of treatment was continued for two weeks, at the end of which time the pulse was found to be full and soft; the 'heart troubles' had disappeared; the distended abdomen was much reduced; the bowels were more regular, and digestion was much improved. Continued the Caroid for another fortnight in combination with remedies for the establishment of the nervous system, which the patient complained of as being 'much out of tune.' He is now, at the end of a month, in good health—J. P. Koonse, M. D., Lafayette, Ind., in *Interstate Medical Journal*, Oct., 1900."

In the *Monthly Cyclopedia of Practical Medicine*, May, 1901, Chas. A. Graeber, M. D., of Meriden, Conn., reports several cases treated in a similar manner with Caroid, from which we extract the following:

"CASE II. Miss J. K., æt. 24, is a shop girl, who sits ten hours a day bent forward in her chair. She is thin and anæmic; weighing ninety-eight pounds, reduced from one hundred and twenty-eight. She states that she has not enjoyed a meal for many months, but suffers great pain after the slightest repast, besides belching gas at all hours of the day and night. As she was very constipated, going sometimes, she said, for 'eight days without a movement,' I im-

mediately gave her a thorough purging with sulphate of magnesia. A teacupful of hot water, with salt, was then prescribed three times a day before meals; Caroid, 5 grs., being given after every meal in milk. One month after the beginning of this treatment, the patient reports that her bowels are regular, that she has gained ten pounds, feels much better and can eat any kind of food.

CASE III. Mr. D. C., æt. 49 years, 5 feet 5 inches in height, and weighing 112 pounds, was a physical wreck from dyspepsia,—not daring to eat his dinner during the day when at work. He was accustomed to eating his meal in the evening, after the day's work was done, and even then suffered great pain during the night or until the food was vomited. He therefore obtained but very little sleep. Various modes of treatment had already been employed in this case, but with unsatisfactory results. Learning that the patient was addicted to the tobacco habit, having been an inveterate chewer, for twenty-eight years, its further use was at once interdicted and sweet flag and gentian recommended as a substitute. The usual hot water and salt potatoes were ordered to be taken before meals, the latter to consist of dry food without liquids. Five grains of Caroid were also given as usual after each meal. After one month's treatment the patient reports that he has gained six pounds in weight, enjoys his meals, sleeps well and feels ten years younger."

NOTE.—It will be observed that, in the case recited by Dr. Lewis,

"Caroid and Charcoal Tablets" were employed; while in the others the plain Caroid powder was used with equal success,—the dose ranging from two to five grains. Scores of similar reports have come to us, in which one or the other form of medication has been used with satisfactory results in the treatment of gastro-intestinal catarrh. The tablets have been prepared for those who prefer to administer the ferment in this convenient form, and in order that other remedial agents may be incorporated with it. In the case described by our correspondent we believe that the "Caroid and Charcoal Tablets" will be found especially applicable. If it should be found that the bowels need further assistance, then we should administer one of the "Caroid Laxative Tablets" every night at bed time.—[EDITOR.]

—:o:—

CORRESPONDENCE DEPARTMENT.

WISHES THE ALIMENTARY
REVIEW. WHY IS IT MAIL-
ED GRATIS?

Editor Alimentary Review:

No. 3, of THE ALIMENTARY REVIEW has just come to my table. I like it. I don't expect, in this life, "something for nothing", but please keep my name on your list, and if Nos. 1 and 2 are not exhausted, I wish them also.

Yours truly,

H. C. BRAINERD, M. D.,

Cleveland, O., Mar. 12, 1902.

443 "The Arcade".

ANSWER: We have been glad to forward the two numbers of the REVIEW, as requested. Numbers

1 and 2 were devoted especially to the consideration of "Dyspepsia" and "Infant Feeding" respectively, while number 3, was devoted to the subject of "Typhoid Feeding" and number 4 to "Home Predigestion of Food". We still have a limited number of copies of each issue on hand, and will be pleased to mail missing numbers to any physician who wishes to complete his files. In doing this, we do not feel that "something is being given for nothing", for, as we have previously stated, the REVIEW is published and mailed to the doctor in order that the claims made for Caroid may be presented to him in a befitting manner. We contend that any new digestive agent which has a scientific reason for its existence as well as a wide range of therapeutic application, cannot be properly introduced to the notice of the profession in the space usually allotted in the medical journals for advertising purposes. In other words, we believe that *clinical evidence* should be submitted to the doctor, sufficient to convince him that it will be to his interest as well as that of his patient to thoroughly investigate the therapeutic claims made for the new digestant. We agree with the doctor in his viewpoint that it is unwise to prescribe a new remedy—especially a ferment—until he is convinced that it possesses greater merit than any that he has previously used for similar purposes.

In the pages of THE ALIMENTARY REVIEW, opportunity is afforded to present the latest views of stomach specialists on the subject of artificial digestives, in the treatment of

diseases of alimentation, together with their experimental investigations concerning the action of certain drugs in influencing the gastric secretions, and authoritative statements in regard to the relative potency of animal and vegetable ferments now employed in therapeutics. Adequate space appears for the publication of clinical articles (reprinted from other journals), containing descriptions of interesting cases in which Caroid has been successfully employed in the treatment, after other agents have failed. Opportunity is given for correspondents to express personal views, and to propound questions. The matter of "food, diet, and digestion", in which every physician is interested, can be discussed in its various phases. The most recent discoveries concerning the nature of the fermentative process or "enzyme-action" in the general scheme of life, both vegetable and animal, may likewise be shown.

Interwoven with all this, and in consequence of its immediate relationship thereto, we are enabled to demonstrate scientifically the therapeutic virtue of a vegetable ferment, such as Caroid, which is known to be chemically unrestricted in its action upon foods. Of still greater import, is the fact, that (owing to the interest excited by the REVIEW) the physician is urged to study more deeply into the phenomena of digestion, as it is exhibited in the entire animate world, and thus learn to appreciate more keenly the significance of theoretical arguments which may be advanced from time to time.

Believing, as we do, that Caroid possesses enzymotic properties found in no other digestant; and, being enabled, as we are in these pages, to present fully and satisfactorily the *reasons* for the belief that is in us, it will at once be seen that our object is to impress this truth upon the minds of others; and, if we succeed in doing this, if we convince the doctor that Caroid is what we represent it to be and induce him to try it, then, in mailing the REVIEW gratis to physicians, we can hardly be rightfully accused of giving "something for nothing".—[EDITOR.]

REQUEST FROM THE WAR DEPARTMENT.

GENTLEMEN: Will you please send us copy of THE ALIMENTARY REVIEW, commencing with Vol. 1, No. 2, to the following address: "Library of the Surgeon General's Office, U. S. Army, Washington, D. C." Franked envelope enclosed for reply.

Very respectfully,
LIBRARY SURG. GEN. OFFICE.,
Washington, D. C., Mar. 15, 1902.
Cor. 7th and B Streets, S. W.

NOTE: We have taken pleasure in forwarding to the Librarian of the Surgeon General's Office the several copies of the REVIEW as above requested. It is no little gratification to us to observe this interest taken in our little journal by so competent a judge of medical literature. It is evidently the purpose to keep the REVIEW on file in the Department as a means of ready reference concerning the subject of which it treats. We cannot, therefore, but believe, that, if we have succeeded in presenting something which is consid-

ered of substantial worth in this quarter, we must also succeed eventually in interesting the majority of physicians in active practice, whose conservatism in such matters is certainly not more pronounced. It is encouraging to thus note these facts; and we shall, in the future, make an especial effort to merit all such indications of approval.—[EDITOR.]

CAROID LAXATIVE TABLETS INDICATED.

Editor Alimentary Review:

What treatment would you suggest in the following case? Would also inform you that I am not acquainted with the virtue of "Caroid".

CASE.—Male; age 60; weight about 165; sober in his habits and well preserved for his age; appetite variable; not constipated and not regular in evacuation of the bowels; about twice a month, complains of torpid liver, headache and insomnia. All of these symptoms disappear when a purgative is given. Attribute his trouble to an affection of the gastro-intestinal tract (i. e., indigestion of certain foods) because when eating a light dinner and no supper the patient has a refreshing slumber during the night. Do you think that Caroid Laxative Tablets would give satisfactory results in this case?

Yours very truly,

CHAS. EWERNER, M. D.,
St. Louis, Mo., Mar. 10, 1902.

ANSWER: We would suggest the employment of the same treatment here as has been recommended by us at the conclusion of our remarks under "Recital of Cases", appearing elsewhere in the present issue, that is, we believe that the "Caroid and Charcoal" Tablets prescribed in the manner recommended by Dr. Lewis (in the case described by him), will prove especially beneficial. If it should

be found that the bowels need further assistance, then we should administer one of the "Caroid Laxative Tablets" every night at bed-time.—[EDITOR.]

A CHRONIC CASE RELIEVED.

The American Ferment Company.

GENTLEMEN: I just received a letter from a gentleman living in Iowa for whom I prescribed Caroid and Charcoal Tablets, some four months since. He is about 70 and has suffered from stomach trouble for many years, consulting some leading specialists. He says: "I now have to report feeling better for the past three months than for as long a time during the past eight years. After commencing with the Caroid and Charcoal Tablets I used them 3 times a day until I had taken 450 when I felt quite well so far as my stomach was concerned".

This only increases my high regard for Caroid, and I thought you might be interested in this report. A babe of 9 months, in a badly nourished condition, was greatly improved by the Caroid Essence with milk, last fall, and is perfectly well long since.

Sincerely yours,

A. M. DUNCAN, M. D.,
Bucyrus, Ohio, Mar. 22, 1902.
424 E. Rensselaer St.

NOTE: The combination of Caroid and Charcoal, as used above and as represented in "Caroid-Charcoal Tablets", has become very popular with physicians who have used it. Nor do they hesitate to recommend it to their professional brethren; who, in turn (after a few clinical successes) urge it upon others. Judging from the numerous favorable reports, therefore, which have been received recently concerning this tablet, it would seem to be fast forging its way to the front as the favorite of the Caroid combinations.

In pediatric practice and in "typhoid feeding", the Essence of Caroid is now being employed quite extensively. It may be used (1) as an agent to *Caroidize* the milk before feeding it, or (2) as a digestant, administered after feeding, and (3) as a valuable vehicle for the employment of other drugs. In his report of "Fifty Infants Treated with Caroid", Dr. Russell Pemberton, Physician-in-Charge Out Patient Department St. Mary's Free Hospital for Children, New York City, employed the Essence in several instances with excellent results. (Cf. *Monthly Cyclopædia of Practical Medicine*, Jan., 1902.) In the treatment of the bottle-fed infant, or the babe of twelve months (or over) who had been weaned, it was his practice to prescribe a half-teaspoonful of the Essence after each "three-hour feeding". He explains its beneficial action as follows: Upon the casein of milk, Caroid evidently produces a disintegrative or rennet-like action. Indigestible curds are rendered soft and flocculent, and are thus presented in a condition more ready for absorption. In this way, hard coagula are avoided, which otherwise, may be carried into the intestinal tract to irritate and cause digestive disturbances". To those of our readers who are interested in this subject, we would state that an abstract of ten cases from Dr. Pemberton's report may be found in Vol. I, No. 3, of THE ALIMENTARY REVIEW.—[EDITOR.]

A thing of beauty is a joy while it continues to draw,—*Ex.*

THE SUBSTITUTION EVIL.

The American Ferment Company.

GENTLEMEN: If convenient, will you kindly inform me what is the combination in the inclosed tablet? It was given me by a friend last September out of a Caroid bottle, and called "Caroid"; but it tastes like elm bark and antikamnia. Do you compound any preparation that acts as a nerve sedative? The fellows to this tablet certainly had great power to quiet the nerves.

Very truly,

S. J. SCOTT, M. D.,

Norwood, Md., April 15, 1902.

ANSWER: We are informed by The American Ferment Company that the so-called "Caroid" sample inclosed by Dr. Scott was an utter fraud. The tablet was not made by them, and what ever else it may have contained it did not contain Caroid. It was evidently a case of substitution "pure and simple"; i. e., a spurious Caroid tablet dispensed in a genuine Caroid bottle. We cannot find a strong enough word in Webster's dictionary with which to stigmatize this act. A new word should be coined. The word, "substitution", is altogether inadequate to express the meaning. The evil that may result from this practice can hardly be estimated. The manufacturer may lose his reputation; the doctor may lose his practice; and the patient may lose his chance of recovery, as a consequence. We are glad to note that medical editors throughout the land are awakening to the importance of adopting some effectual means of suppressing this evil. They are urging physicians to insist that their directions shall be literally followed. At the bottom of every advertising page in many medical journals of the day

may be seen the following line: *"No physician can afford to be indifferent regarding the accurate filling of his prescription"*. It is hoped that this concerted action on the part of medical publishers may result in directing the attention of the physician to the necessity on his part of exercising a due degree of caution. While this may be considered but an entering wedge to the campaign that is likely to follow, yet if the members of the profession are brought by it to a realization of their duty in the matter, it may result eventually in checking the evil to no little extent. Probably it will not be suppressed entirely until stringent legal measures are enacted by the legislatures of the several states. We understand that one of the largest pharmaceutical houses in the country, located in Detroit, is furnishing the retail druggist with bottles and labels which imitate well-known proprietary goods; and all that the druggist has to do is to insert the substitute which he prepares or has prepared by the house referred to. Fine and imprisonment should follow this criminal act.—[EDITOR.]

ANIMAL VS. VEGETABLE FERMENTS.

The American Ferment Company.

DEAR SIR: Please find enclosed M. O. for ninety cents, for which please send me one bottle (150) Caroid, Charcoal, Boric acid, Sacch. Lactis, etc., Tablets. Could the therapeutic value of Caroid be enhanced by the addition of pepsin or pancreatin in the same B?

Respectfully,

WALTER H. PAINE, M. D.,
Egan, Texas, May 20, 1902.

ANSWER: The enzymotic power of Caroid could not be enhanced by the addition of pepsin or other animal ferments. The therapeutic value of Caroid consists in its action regardless of chemical conditions, i. e., whether the medium be acid, alkaline or neutral. Pepsin and pancreatin, on the other hand, require acid and alkaline conditions respectively, else they are inert. If physicians had sufficient confidence in the action of animal ferments, there would be no occasion for their using others. It is because of their lack of faith in this respect that they are anxious to test the virtues of the vegetable ferment; but, to do this properly, it is essential that the latter be given alone and uncombined, i. e., so far as other ferments are concerned. If Caroid, then, is selected, Doctor, give it alone, and give it a chance until found wanting. Your aim is to aid the digestive process, as a whole, by prescribing an agent which acts enzymotically upon all foods irrespective of environing chemical conditions. Caroid will do this: the animal ferments will not; therefore any addition of the latter, as an adjuvant to the former, is entirely useless.—[EDITOR.]

DOES NOT WANT TO BE WITHOUT THEM.

The American Ferment Company.

GENTLEMEN: On May 13th, I sent you \$2.00 for Caroid Tablets (plain). On May 17th, I received a letter from you stating that you had received the order and would send the tablets immediately: but, up to this writing, I have not received them. Am out of them and cannot do without

them. Have a patient who was very low with stomach trouble. Nobody expected him to live! He was not able to work for nearly a year. Caroid helped him, and he is now as strong as ever, only at times he feels a little of it. Therefore he does not want to be without the Tablets. This, I think, is the fourth time sent for 500 of the Tablets from you, and once before you had misdirected them to New York, but finally after waiting about three weeks I got them. Now, I hope to hear from you soon.

Respectfully,

CHAS. MELLIES, M. D.,

St. Louis, Mo., May 26, 1902.

3825 N., 20th St.

ANSWER: The delay in this case was, of course, unintentional, and was due to haste and an oversight on the part of the shipping clerk. An error of this kind is exceedingly rare in his department and doubtless will not occur again. Efforts are made to fill physicians' orders promptly; for the importance of timely receipt is fully understood in these cases. In many instances, the doctor could expedite matters by ordering from the nearest wholesaler. Especially is this true of physicians located at a considerable distance from the point of manufacture. The best method, however, (in escaping this inconvenience of waiting), is for the doctor to request his local druggist to keep a supply of Caroid in stock, and thus fill his prescriptions without delay. [EDITOR.

HIS PROFESSION.—Prisoner: "I was quietly attending to my work when this man arrested me."

Magistrate: "What is your business?"

Prisoner: "I am a burglar."—*Ex.*

SELECTED ARTICLES.

DIGESTION OF ROOT CANAL CONTENTS WITH CAROID SOLVENT.

Read before the New York State Dental Society at Albany, May 14, 1902.

BY LEO GREENBAUM, M. D., D. D. S.,
PHILADELPHIA, PA.

(Reprinted from *The Dental Cosmos*, Sept., 1902.)

The invitation of your president, Dr. John I. Hart, to prepare a paper for this society met with ready acceptance on my part because I very well knew of your fraternal feelings, and desired to reciprocate them. As the time approached, however, for collating the substance of the paper I appreciated difficulties not before apparent. The preparation of a paper is one thing, the offering of something useful and original is quite another.

Being engaged as teacher in examining into the value of new drugs, and also new modes of therapeutic treatment, it occurred to me that it might be well on this occasion to present some conclusions I have arrived at concerning a few drugs and their action. If not distinctly original, perhaps some of you may find certain features of this offering useful.

Medical journals are replete with reports of cases concerning the uses of adrenalin hydrochlorid. Some of these are laudatory to a very high degree. From an extended use of the drug in the Clinic of the Philadelphia Dental College I am unable to offer support to a spreading belief that this

agent will supersede every known drug employed in the local arrest of hemorrhage. In such highly attenuated solutions as one in one thousand and one in five thousand it exercises appreciable contractile effects upon capillary vessels, making it a useful drug in many cases; but it does not give promise of promptly checking hemorrhage occurring around a tooth.

The acetate of eucain, although not so universally lauded as the preceding one, has received numerous indorsements as possessing such non-irritating qualities as would enable it to outrank as a local anesthetic the eucain hydrochlorid. I procured this drug from the European manufacturer, and after faithful trial found that it possessed the same objectionable features as the former salt of eucain, i. e., causing swelling of the parts into which it has been injected.

These negative results discouraged me so far as gaining material for the promised paper was concerned, until on investigating the different methods of root-canal treatment I obtained results which, to my mind, were of sufficient importance to be presented to the notice of this body.

The subject of root-canal treatment is not new, but it is of vital interest to every practitioner. The severest application of modern antisepsis has been made in the treatment of pulpless teeth. Recognizing the difficulty attending the complete removal of organic tissues from root-canals and the decided liability to sudden septic changes involved in their retention,

almost every known antiseptic has been introduced into pulpless teeth; and the following modes of treatment have been suggested in the hope of successfully eliminating a predisposition to septic changes after devitalization. The success attained in this direction is still far from being what we would like it to be; therefore, any new suggestions should at once attract the attention of the profession and receive serious consideration.

Of all the materials which have been employed in root-canal fillings at one time or another the profession seems finally to have decided in favor of gutta-percha and zinc oxychlorid. About ten years ago Dr. Callahan, of Cincinnati, Ohio, introduced his sulfuric acid treatment; and upon careful reflection it becomes quite evident that it represents the only advance made in root-canal therapeutics in the twenty-five years ending with its presentation. Too much praise cannot be given Dr. Callahan for his method, and the ready and general acceptance accorded this mode of practice bears sufficient testimony to its merit.

A few years after Dr. Callahan made known his sulfuric acid treatment, Dr. Söderberg, Sydney, Australia, introduced a method of root-canal treatment comprising, in part, new features. Recognizing the great difficulty in many cases attending the removal of pulp-filaments from attenuated and tortuous canals. Dr. Söderberg evolved the plan of removing as much devitalized tissue as he could, and placing in the canals a paste pur-

posely compounded to so affect the remaining organic substances in the root-canals that they should undergo mummification and hence present unsuitable soil for bacterial development. Dr. Söderberg's paste consists of desiccated alum, thymol, glycerol, and zinc oxid.

The remarkable drying power together with the high antiseptic value of formaldehyd, makes it a very valuable addition to Dr. Söderberg's mummifying paste. The formaldehyd has a hardening power upon the paste itself, which is decidedly advantageous, as it insures retention in place.

More recently another method, fathered by Dr. Harlan, has been added to the list. This is known as pulp-digestion. It is the application of Papain to the devitalized and gangrenous pulp.

The following experiments were made for the purpose of obtaining some idea of the relative value of these principal methods. In order to obtain a proper standard of comparison the most favorable conditions of aseptic root-canals were produced by selecting normal teeth with accessible roots, two canines and three centrals. The pulps of these teeth were devitalized, every detail of the operation being conducted under the strictest antiseptic precautions. All instruments, the rubber dam, and the hands of the operator were treated in accordance with the most modern knowledge of aseptic requirements. The clinic of the Philadelphia Dental College offered the necessary teeth for the experiments, and I had no hesitancy in

justifying the act upon the basis of "means to an end."

After the pulps were devitalized the canals were filled with chloro-percha and gutta-percha points and the cavity filled with zinc phosphate. After six weeks the teeth were opened under antiseptic precautions, and the contents of the canals placed in culture media. The results were negative,—no evidence of bacterial growth.

The second series of experiments was conducted with teeth in which canals were treated with sulfuric acid. These cases were selected,—three containing recently devitalized pulps and three putrescent pulps. The treatment was that which is generally followed, 50 per cent. sulfuric acid being used, afterward neutralized with sodium bicarbonate. This was continued until it seemed that the apex had been reached. The canals were then filled with chloro-percha and gutta-percha points. The aseptic precautions here, as in all subsequent experiments, were like those before cited. After three months these teeth were removed, the canals opened, and bacteriological examinations made. There were negative results, except in one of the putrescent cases which showed evidences of pyogenic micro-organisms.

The third series of experiments involved the use of mummifying paste. Six recently devitalized pulps were selected, and the result in two cases showed the formation of pyogenic micro-organisms. In one of these two cases the root-canal contents upon removal were found to be very foul. The tooth

was removed owing to trouble and the desire for examination, and it was found that the mummifying influence had not penetrated beyond one-third of the distance of the root-canal.

The fourth series of experiments was conducted with the method of digesting the root-canal contents. In place of Papain, as suggested by Dr. Harlan, the analogous substance "Caroid Solvent" was substituted. The reason for this change was the greater efficiency of Caroid, and the ease with which it could be used, as there was no necessity for making a paste.

In six cases, immediately after devitalization and partial removal of pulp, Caroid Solvent was sealed in the pulp-chamber, which, after twenty-four hours, was opened and washed out with solution of sodium bicarbonate and filled as in previous experiments.

In six other cases containing putrescent pulp tissue a few drops of Caroid Solvent were introduced by means of a pipette, sealed in the cavity with temporary stopping, and after two days washed out with alkaline solution; root-canals filled as before. After three months the root-canal fillings of all these twelve cases were removed and presented for bacteriological examination. Results were negative in all but one case, which showed bacterial growths. All of these experiments were conducted under the supervision of Dr. O. E. Inglis. The personal equation may therefore be eliminated and the conclusion drawn that thorough removal of root-canal contents un-

der absolute aseptic conditions offers the best means of preventing subsequent septic changes.

Furthermore, we may conclude that we possess in the "acid method" and "pulp-digestion" two methods of root-canal treatment which may be employed with advantage in all cases where thorough removal is impossible; Caroid Solvent being preferred on account of the ease with which it can be used, its non-irritating property, and its power of penetration.

A few words about this agent. Caroid is a vegetable digestive obtained by mixing the ferments of the plants *Carica Papaya* and the fat-splitting ferment of *Colza*. According to extensive investigations by Prof. Chittenden this substance possesses marked power to dissolve organic substances; this effect is produced in acid, alkaline, or neutral solutions, and in the presence of many chemicals, antiseptics and therapeutic agents; it exerts its peculiar power at a wide range of temperature and irrespective of changing media or environments. Caroid as a solvent of dead organic tissue has recently been used quite extensively for the removal of hardened and tenacious secretions in the naso-pharynx and also the false membrane of diphtheria.

In order to supply the profession with a stable solution the manufacturers have prepared a saturated solution of Caroid in a menstruum which prevents its deterioration, calling it "Caroid Solvent."

The laudatory articles which appeared in medical journals sug-

gested the use of this liquid as a substitute for papoid in the treatment of root-canals, and the surprising results obtained during the first series of experiments induced me to use it in a large number of cases of putrescent root-canals which presented themselves in the college clinic. I have the record of eighteen cases, but not wishing to weary you with a recital of these, will simply state that the good results obtained from the use of Caroid Solvent, the ease with which it can be applied, the penetrating power of this digestive upon all organic tissues present in the root-canal and dentin, giving to the latter a whitened appearance as though it had been bleached, demonstrate the usefulness of this method of treating root-canals.

—:o:—

ITEMS AND NOTES.

Pure Food.—A bill has been introduced by Senator Slater providing that formaldehyd, salicylic acid or any other harmful substance shall not be added to any dairy product intended for human food, neither shall any product containing such substances be offered for sale with impunity.—*Ex.*

Pasteurization of Cream and Tuberculous Butter.—Diversity of opinion exists as to the efficiency of the Pasteurization of cream in the prevention of the spread of tuberculosis by butter; also as to whether this process alters the nutritive value and taste of the

butter. F. HEER (*Ztschrift. f. Hygiene u. Inf.*, Aug. 27, 1901) studies this subject by the observation of the effect of different temperatures and various time exposures to such upon infected butter. This was also submitted to chemical examination in order to ascertain the change, if any, in nutritive value. He recommends that cream be exposed to Pasteurization at 85° C. for two minutes. This is amply sufficient for the destruction of any tubercle bacilli present and has no effect upon the nutritive value or taste of the butter.—*Med. News.*

—:o:—

THERAPEUTIC SUGGESTIONS.

FOR DYSPEPSIA.

BY M. C. MARTIN, M. D.,
HEARTWELL, NEB.

(Reprinted from *The Medical Summary*,
June, 1902.)

As we see much dyspepsia here in this country, probably the alkali water accounts for some of it. Will enclose a favorite prescription for the same, which, with appropriate diet and care, generally relieves promptly.

Forbid tea, coffee, tobacco and liquors; not much sugar at first; remove all carious teeth; regulate the bowels and the diet.

℞ Caroid, 3 ij.
Acid hydrochlor. dil., 3 iij.
Strych. arsen. gr. 1-30, No.
xxiv.
Fl. hydrastis, colorless, 3 j.
Tinct. gentian, 3 iij.
Aq. puræ, q. s. ad 3 vj.

M. Sig. Teaspoonful in half glass of water after each meal. Tell them to take this and get well.

The writer is now at work on a brief therapeutic and dose-book, which will be out in a few months.

A CASE OF GASTRO-INTESTINAL INDIGESTION WITH RHEUMATISM.

BY O. J. KNOLLE, B. S., M. D.,
INDUSTRY, TEXAS.

(Abstract from *Uric Acid Monthly*, May-June, 1902.)

I have a case which seems to be a little stubborn. Patient, male, 70 years old, has been troubled, he claims, with rheumatism all of his life, and for the last two years has had stomach trouble. I made a careful examination and am positive he has no cancer which was claimed by one physician who treated him before. He has pain in the stomach and cannot digest well; has fearful headaches, and also rheumatic pains in the legs; no fever. The vessel in which he urinates contains a brick red deposit, which has collected around the sides. His water scalds whenever he micturates. I have had to give him morphia for the pain in the stomach. Although I am sure it is a case of uric acid poisoning, thialion alone will not move his bowels. I have to give something else with it.

Of course, I have given pepsin, etc., for the gastric disorder, but have now changed to Caroid, a vegetable digestant. Please let me hear from you shortly, and oblige.

[N. B. The following letter was sent in reply to the above by the editor of the *Monthly*:

"DEAR DOCTOR: In answer to your letter of the 6th inst., concerning the patient with constipation, rheumatism, etc., we would state that this appears to be one of those cases of muscular atony of the bowels sometimes met with in elderly people, where the action of a solvent and cholagogue, like thialion, requires the assistance of a motor excitant (strychnia or nux vomica) to insure a daily movement. Thialion is not a cathartic in the true sense of the word, but an hepatic stimulant; and, in cases like that you describe, it is sometimes necessary to supplement its action with that of a more powerful evacuant. We think the vegetable ferment Caroid, which you are now using, will benefit this patient's digestion, so that the use of morphia may be dispensed with entirely. We also advise the daily ingestion of considerable quantities of water—hot water preferable. The urine should be tested occasionally with litmus paper, and thialion given in sufficient dosage to keep the reaction neutral or slightly alkaline. It should be prescribed in a glassful of hot water, at least once per day, an hour before breakfast. If the gastric pain be due to fermentation of undigested food, the Caroid should afford relief without the aid of morphine."

—:o:—

A doctor once presented himself at the Golden Gates for admission, and after passing a fair examination as to his conduct, Saint Peter agreed to permanently admit him if he could pick out Adam and Eve from the assembled angels. The doctor looked around and soon found his progenitors. But Peter was puzzled and asked the doctor how in the name of the golden harps had he managed to recognize the first couple. "Oh!" said the doctor, "that is quite easy; they are the only ones without an umbilicus."—*Ex.*

Caroid and Nux Vomica Tablets

For Use In Atonic Dyspepsia.

Having received many requests from physicians for a tablet combining the digestive properties of Caroid with agents that stimulate the motor functions, we have decided that hereafter we will furnish tablets made after the following formula:

℞ Caroid, gr. $1\frac{1}{2}$.
Ext. Nux Vomica, gr. 1-5.
Pulv. Rhubarb, gr. $\frac{1}{2}$.
Pulv. Ipecac, gr. 1-20.
Pulv. Capsicum, gr. $\frac{1}{4}$.
Sacch. Lac.,
Pulv. Arom., aa q. s.

The above tablets are put up in bottles containing 150 and 500.

THE AMERICAN FERMENT CO.,

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ESSENCE OF CAROID

An elegant, palatable and permanent solution of the vegetable ferments contained in Caroid, and possessing their well known qualities of acting upon all kinds of foods, in acid, alkaline and neutral media. It is therefore

A VALUABLE VEHICLE

when a digestive agent is wanted in combination with other drugs.

A USEFUL ADJUNCT IN INFANT FEEDING

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THE AMERICAN FERMENT CO.,
Jersey City, N. J.

If

FOR ANY REASON you are unable to procure thialion from your retail druggist, or he from his wholesale druggist,—**remember** that by sending us **one dollar** we will forward four ounces, carriage paid, to you on receipt of same.



Messrs. Thomas Christy & Co., 4, 10 and 12 Old Swan Lane, Upper Thames St., London, E. C., England, will furnish four ounces by parcel post, prepaid, on the receipt of 4/-.



Messrs. Dart & Chapman, 641 Craig St., Montreal, Canada, will furnish four ounces by parcel post, prepaid, on the receipt of \$1.35.

THE VASS CHEMICAL CO.,
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A LAXATIVE PAR EXCELLENCE.

B Caroid, gr. 1.
Cascara Sagrada, gr. 2.
Podophyllin, gr. $\frac{1}{8}$.
Ext. Belladonna, gr. $\frac{1}{16}$.

CHOCOLATE COATED.

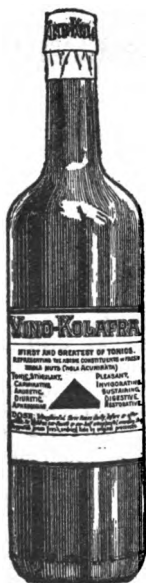
Caroid is a corrective of gastric and intestinal irregularities. It is not only a useful aid in checking diarrhoea, but in relieving constipation. Combined with the laxative principles of Cascara Sagrada, Podophyllin, etc., as in "Caroid Laxative Tablets," it produces most excellent results. The fluidity of the bile is augmented, a more generous outflow ensues, and the peristaltic action of the bowels is consequently increased. Caroid Laxative Tablets have been uniformly pronounced by physicians a most desirable combination, for the relief of chronic constipation, especially in women and those who lead a sedentary life.

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(Wine of Kola)

A preparation made from pure malaga wine and absolutely fresh West India kola nuts, by special processes carried on without heat, whereby the full therapeutic value of the nut is secured and permanently retained. An elegant and palatable product.



ITS DISTINGUISHING FEATURES:

**A powerful tonic stimulant without
harmful reaction or after-effects.
Induces no habit.**

Which qualities render it vastly superior to the many tonic wines heretofore employed in medicine.

The use of Vino-Kolafra as a tonic is indicated in anæmias, in chronic affections of a debilitating character and in convalescence from severe ailments.

"In nervous derangements due to digestive disorder, it is greatly aperient and stomachic."—
MONNET.

"As a heart tonic so gratifying are the results that we may say of it that in the last stages of cardiac affections it sometimes works resurrections."—SCHUCHARDT.

PREPARED BY

The Kolafra Co.,
Jersey City, N. J.

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A LAXATIVE SALT OF LITHIA.

INDICATIONS:

Gout, rheumatism, uric acid diathesis, constipation, acute and chronic, hepatic torpor, obesity, Bright's disease, albuminuria of pregnancy, asthma, incontinence of urine, gravel, cystitis, uro-genital disorders, chronic lead poisoning, headache, neuralgia, neurasthenia and lumbago. It is also indicated in all cases where there is a pronounced leaning to corpulency, reducing to a minimum the always present tendency to apoplexy. In malaria because of its wonderful action on the liver increasing two-fold the power of quinine. Hay Fever.

Prepared Only for the Medical Profession.

A Large Book of 200 Pages, containing the literature and clinical reports complete, on this potent drug, sent to you on application.

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A STARCH CONVERTING FERMENT
OF VEGETABLE ORIGIN. ❀ ❀ ❀

CAPABLE OF CONVERTING
under suitable conditions, **200 times its weight**
of starch into maltose and sugar.
Useful in the preparation of predigested starch
foods, and generally wherever an Amylo-
lytic Ferment only is required.



Price per Ounce, postpaid, 60 cents.



**THE BEST AND CHEAPEST PREPARA-
TION OF DIASTASE EVER OFFERED.**



THE AMERICAN FERMENT CO.,
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E. S.

Present Status of Digestive Ferments, Animal and Vegetable.

The
MAR 2 1903
Alimentary Review.

A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

Vol. I. Feb. and March, 1903. No. 6.
JERSEY CITY, N. J.

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Correspondence Department:			
Has Proven Valuable—Acts in All Media—Best Preparation			

CAROID



A vegetable digestive ferment which has not—like animal ferments—formed the fixed habit of acting only in connection with acid or alkali upon only one class of food.

CAROID in action is independent and resourceful. It digests all food (including starch) in all media (acid, alkaline or neutral) acting throughout the whole digestive tract.

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The Alimentary Review.

A Medical Journal Devoted Exclusively to the Consideration of Food, Diet and Digestion; Comprising a Summary of the Latest Scientific Investigations on the Subject of Artificial Digestives and the Importance of Environment in Determining the Enzymotic Action of Vegetable and Animal Ferments.

VOL. I. JERSEY CITY, N. J., FEB. & MAR., 1903. No. 6.

THE PRESENT STATUS OF THE DIGESTIVE FERMENTS, ANIMAL AND VEGETABLE.

Animal Pepsin.—Nearly all recent writers of text books, upon diseases of the stomach and therapeutics, concur in the belief as to the practical inefficiency of pepsin. In confirmation of this statement, the following authors are cited:

Ewald, Diseases of the Stomach, (1897).

Einhorn, Diseases of the Stomach, (1896).

Hemmeter, Diseases of the Stomach, (1902).

Hare's System of Practical Therapeutics, (1901).

A. Mathieu (Paris), Diseases of the Stomach and Intestines, (1894).

H. C. Wood, Therapeutics; Its Principles and Practice, (1900).

Shoemaker, Materia Medica and Therapeutics, (1901).

Bartholow, Materia Medica and Therapeutics, (1899).

Sollman, Pharmacology, (1901).

There is a uniformity of opinion among all of the above mentioned

authors as to the fact stated that pepsin, in actual practice, is inefficient. The reasons for its failure, so far as stated by them, may be briefly summarized as follows: (1) Animal pepsin acts only in an acid medium, H. Cl. (2) In the majority of cases of maldigestion the trouble is due to a deficiency of the acid medium rather than to any lack of pepsin in the natural secretion.

In no single instance have the above writers referred to the several other reasons why pepsin is and must be, in the digestive tract, ineffective. No rational explanation of the enormous difference between the performance of pepsin in laboratory tests and its performance in the digestive tract, is given. It is the purpose of this paper to point out some of the simple reasons why these differences exist.

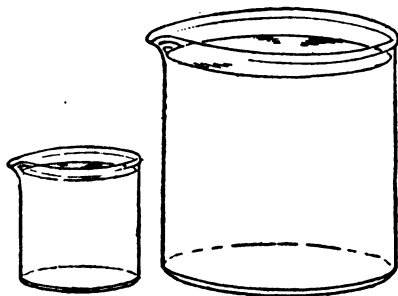
First, let us see what is the actual performance of pepsin in the laboratory and under what conditions its apparently enormous power is exerted. Under the U. S. P. test, prescribed for pepsin, one grain of standard pepsin digests

3,000 times its own weight of egg albumen; which means that one grain of standard pepsin will digest nearly seven ounces of egg albumen, and that five grains will digest more than two pounds of egg albumen. In the stomach, according to these authors (and the observant portion of the medical profession as well), pepsin, used clinically, is inactive save in rare and exceptional cases.

The United States Pharmacopœia gives the following requirements of a pepsin test; viz.: "10 grammes of cooked albumen, passed through a fine sieve (30 meshes to the inch) in 100 c. c. (about 3½ ounces) of acidulated water,—the mixture to be kept at a temperature of 100° F. and shaken every fifteen minutes."

Here then are the conditions, given by our highest authority, under which the pepsin of the pig will act energetically, and as will appear from the following, these are the only conditions under which it *will* act; to wit: The albumen must be in finely ground particles and kept constantly floating in a large volume of clear liquid. For each ounce of this finely ground albumen, there must be nine and three-eighths ounces of liquid. Applying the above to the stomach, we find that for each one pound of solid taken at a meal (not an unusual amount of solid for one meal) there must be present four and seven-tenths quarts of liquid, which is probably present in the stomach of the pig, but not in that of a human being. Under ordinary circumstances, about one pint would be nearer the average

amount of liquid found in the stomach after a meal. In such a proportion of liquid, pepsin is practically inert.



Amount of liquid actually present after a meal, about 1 pt.

Amount of liquid required, according to Pharmacopœia, to digest one pound of solids, 4-10 quarts.

But even if the required amount of liquid were present, there are nearly always in the stomach other conditions which inhibit the action of pepsin, thus:

a. *Pepsin digestion is stopped by the products of its own activity and that of other ferments, such as ptyalin or diastase.*

b. Pig pepsin, for practical purposes, does not act in the presence of converted starch, even where the proportion of liquid is large.

c. It must be remembered that pepsin action only takes place in a medium strongly acid, and all authorities agree that in maldigestion there is a deficiency of acid secretion in a considerable number of cases.

Animal Pancreatin and Trypsin.—The ferments extracted from the pancreas of the pig, ordinarily known as pancreatin and trypsin, have the advantage over pepsin in that they act in more condensed

mixtures than pepsin, but their action is also largely interfered with by their own products. In the peptonization of milk, (so far as it can be conducted outside of the stomach) pancreatin and trypsin will do rapid and admirable work. If the laboratory conditions prevailed in the stomach, pancreatic ferments would be all that could be desired. The pancreatic ferments, however, may be eliminated from all consideration so far as their administration by the stomach is concerned, for two reasons: (1) They act only in the alkaline medium of the intestines, and are not only inhibited, but actually and permanently destroyed by acidity equal to the normal acidity of the stomach; (2) They are destroyed by the action of the peptic ferment.

The Vegetable Ferments.—From a considerable number of plants are extracted digestive ferments, which, in the result obtained from their action, do not differ materially from the ferments of animal origin; but there is a wide difference in their behavior under varying conditions. The American Ferment Company have given undivided attention to the matter of ferment-yielding plants, and the isolation of their ferments for more than ten years. Their product "Caroid," may be taken as a standard, and as the best of the vegetable ferment products obtainable.

Let us see how Caroid compares with the animal ferments. If tested according to the prescribed Pharmacopœia method—which requires finely ground particles of egg albumen floating in an im-

mense volume of clear liquid, and in an acid medium—it will be seen that Caroid will not digest as large an amount of pepsin; but if the relative amount of liquid be reduced to anything like the quantity existing in the human stomach under average conditions, the immense superiority of Caroid will be quickly apparent. If the quantity of liquid be further reduced, it will be seen that pepsin is inert, whereas Caroid action is strongly exerted in the most condensed mixtures; furthermore, that Caroid action takes place in acid, alkaline or neutral media.

No one need be in any doubt as to the behavior of the ferments, animal or vegetable, under different conditions, or as to which is likely to be the most suitable for artificial digestion within the alimentary tract.

The Following Simple Tests Can be Made by Anyone: Tests (comparing the action of Caroid and pepsin in condensed mixtures): Take two ounces of fresh lean meat, free from gristle and fat; bring slowly to a boil, and chop fine. Place one-half of the cooked and chopped meat in a glass and the other half in another glass; label the glasses respectively, "No. 1" and "No. 2." Dissolve three grains of Caroid in one ounce of water. Make the solution alkaline by adding three grains of sodium bicarbonate, or acid by eight drops of dilute hydrochloric acid, or leave it neutral by adding neither acid nor alkali. Then dissolve three grains of standard pepsin in one ounce of water. Make it acid by adding eight drops

of dilute hydrochloric acid. Add this solution to glass No. 2. Place both glasses in a warm place for four or five hours. If the two specimens are watched it will be seen that the pepsin during the first half hour, appears to be active, dissolving the surface of the meat quite as rapidly as Caroid during this time; but after the first half hour, it will be seen that the pepsin action has ceased, and no matter how long the experiments may continue, it will do no more work. On the other hand it will be seen that Caroid action continues until the meat is dissolved and peptonized.

Now if the above experiments are repeated, adding a teaspoonful of boiled starch liquefied with diastase, it will be seen that pepsin has under such a condition, almost no action upon meat, whereas Caroid digests it completely in the presence of predigested starch, as in the case of clear liquid.

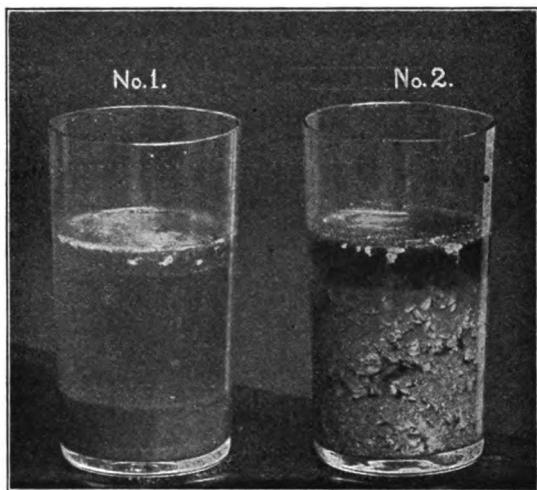
The inhibitive action of its own products upon pepsin except in an immense volume of liquid, may be shown by the following experiment with milk; and a comparison with Caroid action under similar circumstances made at the same time. Take two glasses of fresh milk, holding about four ounces each, (see cuts No. 1 and 2), make luke warm, stir into No. 1 four grains of standard pepsin dissolved in a little water, and eight minims of dilute hydrochloric acid. Stir into No. 2 four grains Caroid, previously dissolved in a tablespoonful of water. Let both stand in a warm place for four hours without further stirring. It will be noticed

that the milk will immediately curdle in each case, but at the end of three or four hours it will be seen that Caroid has dissolved and converted the casein into assimilable products, whereas in the pepsin experiment there still remains a large portion of tough and leathery curd.

A simple test showing the action of acid in destroying pancreatin may be made as follows, to wit:

Put into a glass two ounces of meat chopped fine, boil five minutes. Dissolve three grains standard pancreatin in two ounces of water; add fifteen drops of dilute hydrochloric acid. Let the pancreatic acid solution stand in a warm place for one-half hour, then make alkaline by adding sodium bicarbonate. Then add the pancreatic solution to the meat and let it stand in a warm place (temperature of 100) from three to five hours, and it will be seen that the pancreatin was not merely inhibited by contact with the acid, but totally destroyed—else on being made alkaline it would become active.

Is anything more needed, than the above experiments, to convince anyone that the pepsin of the pig differs widely in mode of action from the pepsin secreted by a human animal? We have on several occasions called attention to the all-important matter of environments in determining the action of the digestive ferments. Each ferment is a law unto itself. The pig, of close kin to the pachyderm—naturally an inhabitant of the mire and marsh, swallowing and wallowing in, and

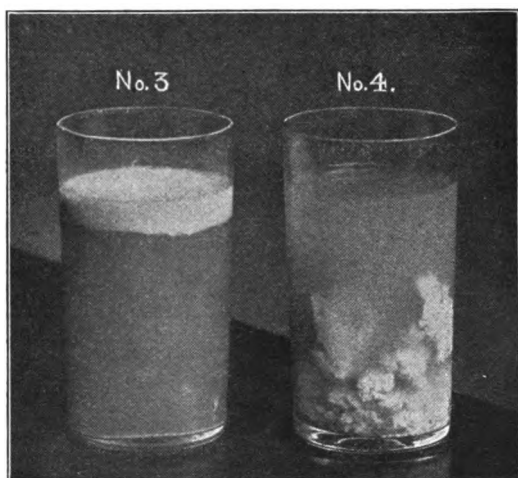


No. 1.

Showing the result of three hours' action of Caroid upon meat fibrine in a condensed mixture. Temperature 100° F.

No. 2.

Showing the result of three hours' Pepsin action upon meat fibrine in a condensed mixture. Temperature 100° F.



No. 3.

Result of three hours' digestion of four ounces of milk with Caroid—showing complete digestion of curd.

No. 4.

Result of three hours' digestion of four ounces of milk with Pepsin—showing undigested curd.

absorbing liquids, its food constantly afloat—has a digestive system which is vastly different from that of man, and one that affords a vastly different environment for the digestive agents that split up its complex food material into simpler products for assimilation. In short, pig pepsin is entirely suited to the requirements of the pig's stomach, and entirely unsuited to the requirements of the stomach of man.

On the other hand, some of the vegetable ferments, acting under changing conditions—acid, alkaline and neutral—and naturally in varying temperatures and in condensed mixtures, have proven themselves to be specially adapted to produce artificial digestion in man.

As to whether it is desirable to give ferments, even though they do act, that is another question. Prof. Hemmeter aptly replies to the charge that artificial digestion is a crutch: that it is better to have your patient walk with a crutch than not to walk at all. The administration both of acid and of ferment should be looked upon as temporary measures, and as artificial. The average physician has had the experience that acid does not always produce the desired results.

—:o:—

VISITOR.—“And was your husband good and kind to you during your long illness?”

Parishioner.—“O, yes, miss, 'e just was kind; 'e was more like a friend than a 'usband.”—*Ev.*

SELECTED ARTICLES.

THE USE OF THE ESSENCE OF CAROID IN ALCOHOLIC BRONCHITIS AND IN CHRONIC ALCOHOLIC GASTRITIS.

BY GEORGE THOMAS PALMER, M. D.,
CHICAGO, ILL.

(Reprinted from *Monthly Cyclopedia of Practical Medicine*, Sept., 1902.)

The treatment of alcoholism has always been a matter of the greatest difficulty with the general practitioner, and so unsatisfactory has it proved that it has opened up a rich field for the medical charlatan. Inducing the patient to bend his will in the direction of cure, when the entire system has been borne up by alcoholic stimulation and when practically every organ has passed through pathological changes on account of the alcoholic excesses, is as difficult as it is important, while stimulating the enfeebled system to withstand the constant craving for intoxicants is, in the present stage of our therapeutics, exceedingly unsatisfactory.

The suggestion of the use of the tincture of strophanthus in doses of *m* v., t. i. d., to check the desire and to bolster the heart, has been acted upon by the writer with practically no good results. Strychnine with stomachics has been disappointing, while cocaine is entirely too treacherous and dangerous a drug to be used in the condition.

The essential element in the successful treatment of chronic alcoholism is the firm will of the patient, and the physician cannot do

a great deal beyond relieving the various symptoms which are most distressing. Whatever the method of treatment followed and however strong the will and determination of the patient, it is almost invariably true that a chronic bronchitis and gastritis will remain long after the most active craving for stimulation has subsided, and these conditions will contribute to making the case far more annoying to the physician and far harder for the patient.

In a considerable number of cases it has been found that, while there is ability to weather the storm which comes with the first struggle for mastery over the appetite, the exhaustion brought about by the subsequent coughing and the constant feeling of unrest in the stomach will induce the patient to give up the struggle after the worst of it has been bravely met.

The treatment of the cough with ordinary expectorants is, for the most part, unavailing. The relief of the stomach symptoms with bitters and capsicum is only temporary in duration and is often the means of accentuating the irritation of the digestive tract. The treatment of the symptoms with sedatives is apparently gratifying, but usually contraindicated by the weakened condition of the heart.

In a number of cases in which the habit had been effectually checked the patients have almost invariably complained of the loss of sleep from coughing, the difficulty of expectorating the tenacious mucus, and the feeling of ir-

ritability and "coldness" in the stomach.

Dissatisfied with any of the ordinary means of meeting these conditions, as set forth in the therapeutic texts, the writer began the administration of the Essence of Caroid, 3 j to a glass of hot water before rising in the morning, with the result that the mucus was raised much more freely and the stomach relieved of the disagreeable sensations, and the craving for the morning drachm reduced materially. Given twice or thrice during the day, the entire chain of symptoms was effectually met and the strain on the patient relieved.

The specific action of the Essence of Caroid in such cases is a matter of more or less speculation, but the results have been gratifying in the extreme. If the slight percentage of alcohol and the stomachics in the Essence are of value, certainly the other elements have such action that the effect is sedative rather than stimulating. The assistance rendered in the digestion of the food and the consequent increase of appetite is of importance, while the solvent action of this active digestive ferment doubtless has some effect upon the mucus on the inflamed membranes. If more or less empirical, it is none the less effective.

"I'm so glad to see you. And how did you enjoy your visit to the south?"

"Oh, not very much! There wasn't a soul where I was staying except intimate friends."—*Ex.*

THERAPEUTIC SUGGESTIONS
ON CAROID.

BY M. E. CHARTIER, M. D.

Faculté de Paris, France; Membre de L'institut
International de Medicin, etc., etc.(Reprinted from the *Medical Examiner
and Practitioner*.)

Although the present period of medical chemistry is an advanced one, it cannot be denied that our materia medica is particularly poor in digestive ferments. For many years we have relied mostly on a single one, the pepsin of the pig, prepared for us in various forms. Nowadays, it is admitted by the majority of the profession that pepsin is inert under the conditions generally prevailing in the digestive tract, when it is administered.

In laboratory tests, as prescribed by the pharmacopœia, pepsin will undoubtedly digest many times its own weight of proteid matter; but it must be remembered that the artificial conditions of the laboratory are one thing and the natural conditions in the digestive tract during maldigestion, another, and that human pepsin and pig pepsin are different products, not as to the result they produce, but so far as their mode of action is concerned.

The action of pig pepsin is greatly impeded by the products of its own activity, for which reason the pharmacopœia tests provide for the use of an enormously greater quantity of liquid, relatively, than is found in the stomach in connection with the average meal.

Again, pig pepsin acts in the presence of an acid medium only.

It acts, in short, under the conditions found in the stomach in a perfect state of health, and when artificial digestives are not needed. It fails in illness because disease deranges these conditions; i. e., too much or too little acid is then present. Hence it is, that in our extremity, we are forced to seek some other source for a capable artificial digestive agent.

Since Darwin demonstrated the existence of proteolytic, as well as amylolytic ferments in plants, and Lawson Tait proved the possibility of their isolation, vegetable digestives have been the subject of more or less investigation. It has been shown that nearly all the ferments existing within the animal body, peptonizing, starch converting, curdling and fat splitting, also exist in plants, where their office is the same as in the animal body. The well-known ability of the vegetable ferments (some of them, not all) to act in all media, acid, alkaline or neutral, constitutes the all important difference between them and the animal products. What we want is the ferment that will act within the body as well as in the laboratory.

Of the ferment yielding plants there are a goodly number, and many varieties of each species, and they afford an inexhaustible field for the work of the pharmaceutical chemist in growing and selecting plants, and in isolating and refining their ferments. Among our prominent pharmaceutical houses, The American Ferment Company alone, has thus far given the problem long and serious attention, and their Caroid has

been brought to the front rank as a vegetable digestive agent.

The manufacturers of Caroid claim not to have relied on one plant for their source of supply, but to have secured best results by a combination of two or three. Be this as it may, I have found that Caroid, in the various forms in which it is presented to the medical profession, is the most reliable digestive ferment which has ever come under my notice. It is the one remedy upon which I can confidently rely to successfully carry out its share of the work in regulating those disorders of the system consequent upon an impairment of the processes of digestion and assimilation, and the long line of subsequent disturbances.

The fact that Caroid digests all kinds of food, (including fats and starches) in all media, is too well known to be insisted upon. I will only call attention here to certain morbid conditions in which its therapeutic use has proven especially satisfactory in my hands, after pepsin and pancreatin had failed to produce results.

In the first place, I may mention all of those diseases, particularly consumption, which are characterized by waste of tissue. When superalimentation is possible in the first stage of phthisis pulmonalis, the patient has a fair chance of recovery. In such cases, Caroid is fairly indicated since it allows of a steady increase in the supply of food. I could quote several instances, in which, by the use of Caroid alone, the desired

result has been reached; the main point being, that in each case, vomiting, which is often so persistent and troublesome, disappeared in a very short time. As a rule, I resort in the beginning of treatment to predigested fresh meat, one ounce, [see Dr. Rottner's formula, p. 209, ALIMENTARY REVIEW for November, 1902], and one raw or soft boiled egg (Caroidized), from three to four times a day. Later on I modified the diet by adding fish, vegetables, etc., followed in each case by Caroid, grs. v. I have noticed that many patients could not get used to milk, which I was compelled to drop from the regular diet, until I gave it in connection with Caroid. I have followed the same rule in typhoid fever in regard to the administration of milk.

In the various forms of dyspepsia, particularly nervous and flatulent dyspepsia, Caroid not only gives instant relief, but invariably effects a cure when systematically administered. When there is an atonic condition of the stomach and bowel, complicated with hepatic insufficiency, the results are actually astonishing.

In the treatment of the so-called "summer complaint" of children, there is no preparation so valuable as Caroid, administered in small doses at frequent intervals. As a matter of fact, the milk fed to the infants should be modified to the proper strength; it is then always well tolerated and assimilated when given in connection with Caroid. The best plan is to feed the children at regular intervals,

always ending the meal with Caroid. The same rule obtains when the breast is given.

As a general rule Caroid is exceedingly useful during convalescence from acute diseases, and experience has also demonstrated its usefulness in the treatment of diabetes mellitus and albuminuria, in which conditions the diet has to be carefully regulated; in these cases Caroid not only acts as a digestive ferment of the highest value, but as a stimulant of the stomach and of the alimentary tract; the nature of the stools amply demonstrating this fact.

It goes without saying that Caroid possesses its own field of usefulness, and does not interfere with other treatment. I may add, however, that in many instances Caroid has enabled me to establish a logical treatment which otherwise the patient could not have followed. This applies particularly to all affections of the liver and kidneys, and whenever it is necessary to maintain the integrity of the digestive functions.

—:o:—

A WARNING.—Mr. Depew says he would like to marry a dozen widows of his acquaintance. Is not Mr. Depew aware of the fact that Mr. Roberts was expelled from Congress for that sort of thing?—*Ex.*

HIS GREAT FEAR.—Wife—"I'm afraid you won't be well enough to go with me to Mrs. Swagger's progressive euchre party to-night."

Husband—"I'm afraid I shall."
—*Ex.*

EDITORIALS.

OPINIONS OF EMINENT AUTHORS ON THE SUBJECT OF DIGEST- IVE FERMENTS.

In our introductory "Essay," at the head of the present issue, we directed attention to the fact that the general consensus of opinion among leading authors and stomach specialists to-day, both at home and abroad, is, that the animal ferments, pepsin and pancreatin, have not proven themselves effective for the purpose for which they have been prescribed in actual practice. It is pointed out that clinical failure has followed their administration in the vast majority of cases, and reasons are given from a scientific standpoint why this should be so. To illustrate this more clearly, we have quoted here in brief, statements extracted from the works of some of the best known writers on this subject; to wit:

"Pepsin used to be, and is yet, very frequently given in combination with hydrochloric acid, the dose being about seven and one-half grains three times daily. Most writers, however, concur in the absolute inefficacy of this drug, and for two reasons; viz.: (1) in most instances, even of diminished gastric secretions (diminished acidity), there is yet an abundant quantity of pepsin present; (2)

most pepsins that are on the market do not by any means show as strong digestive properties as the true pepsin of the stomach.* * * Of late years I have entirely abandoned the use of pepsin."—Einhorn, "Diseases of the Stomach," 182-183.

"Pepsin was for a long time regularly prescribed with the hydrochloric acid, with the pernicious idea that even if it did not help, it certainly did no harm. To-day, however, we know that pepsin is present in a very large number of cases even when free hydrochloric acid is absent. The administration of pepsin, therefore, should be restricted to those cases in which its absence can be actually proved.* * * In cases of complete absence of hydrochloric acid, it would seem rational to administer pancreatin. Experiments, however, made under my directions by Dr. Haafewinkle, showed that the various preparations of pancreatin which were given with the test breakfast, had no stimulating effect on its digestion."—Ewald, "Diseases of the Stomach," 226-227.

"The artificial ferments may be considered in two classes: (1) Those that have been isolated from the mammalian organism, ptyalin,

pepsin and pancreatin; (2) Those derived from the vegetable kingdom—* * * To Fothergill is attributed the saying that ferments are 'crutches.' No doubt many an invalid would prefer walking on crutches than not at all. There are many crutch-walkers, however, who by modern surgery, have been enabled to throw them away and walk by themselves unaided. Just so with the ferments; they may be used with success temporarily, but the best thing to do is to discover how the patient may digest without them.

Pepsin.—There is rarely any indication for the use of pepsin, for, whenever a test-meal shows free H. Cl. is absent, pepsin or pepsinogen are, as a rule, still present.* * * The enormous quantities of H. Cl. necessary to bring about proper action of this pepsin could not be tolerated by any diseased stomach. Pepsin is prescribed too often. Personally, I have ceased using it.

Pancreatin.—Although there are many preparations of this ferment, and some of them very active, the substance spoils and loses its digestive power with age.* * * This ferment is completely destroyed in the gastric juice. This is why thinking practitioners should not use both pepsin and pancreatin together in the same solution. There is but one indication for the use of pancreatin, and that is permanent deficiency, or complete absence of

H. Cl. and enzyme formation of the stomach,

Recently a highly concentrated extract of *Carica Papaya* has been brought into the market under the name of Caroid, which, according to Chittenden, digests proteids, albumin, and starches in any medium. * * * *

If we examine Chittenden results critically, it is plain that the digestive power of Caroid in proteid matter is greater than that of other preparations of vegetable ferments tested in comparison.

The difference in digestive strength is more apparent in these experiments with coagulated egg albumen than with the other form of proteid matter, although quite marked with blood fibrin.

In starch digesting power, Caroid is far superior to the other preparations.—Hemmeter, "Diseases of the Stomach," 343-348.

"Particularly energetic peptonizing ferments have lately been detected in the latex of the *Carica Papaya* and of the common fig, *ficus carica*, and in the fruit of the pineapple, *ananassa sativa*. The peptonizing ferments in the plants differ from those present in animals in being capable of action in acid, neutral and alkaline media. * * * The ferment obtained from the juice of the *Carica Papaya* forms a fine yellow-white powder.

It dissolves with some difficulty in distilled water, almost completely in dilute alkalies and acids. In common with most ferments, its action is greatest at a temperature of 60° C., but it remains active between 12 and 70° C. Hirsch (*Ther. Woch.*, Dec., 1894,) comes to the conclusion that it is the most powerful peptonizer known in a neutral medium."—Gillespie, "The Natural History of Digestion," 24.

"Pepsin is falling more and more into disuse, and justly so, for the objections to it are numerous. Artificially prepared pepsin is certainly much less active than that elaborated by the stomach. Furthermore, the numerous experiments of artificial digestion made by means of human gastric juice have shown that the pepsin is present in the great majority of cases in sufficient quantity; what is wanting is hydrochloric acid.* * * Another objection to the employment of pepsin is the well-demonstrated fact that gastric digestion may be very weak, incomplete, or even absent, with any special deterioration of the general health or appreciable diminution of metabolism. Soulier supplies us with a final argument against the use of pepsin, when he tells us that these preparations are often of bad quality, rapidly deteriorate, and are incorrectly compounded, containing too much al-

cohol or glycerin, which is injurious to the stomach. The same objection may be advanced against pancreatin, and we may add that it acts only in an alkaline medium. It would be necessary, therefore, to give it with a quantity of alkaline salts sufficient to neutralize completely the contents of the stomach. * * * A peptic ferment has been extracted from certain plants, especially from the *Carica Papaya* (papaw). This has a very active digestive power in the test-tube, and possesses the same peculiarity as pancreatin, that it is more active in an alkaline than in an acid medium."—A. Mathieu, (Paris) "The Treatment of the Diseases of the Stomach and Intestines," 117-119.

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 "Only a small portion of commercial pepsin approximates in power the official standard. Probably four-fifths of the drug, which has been given, has been inert, either originally, or from the method of its administration; and in the great majority of cases the good that has been achieved has been due, not to the pepsin, but to the regulation of the diet and habits of the patient, and to the drugs which have been exhibited along with the animal ferments. The value of pepsin has been overestimated, and it has been given to adults in ridiculously small

doses. Pancreatin has been extensively used in dyspepsia, as a digestant, in lieu of pepsin. For action it requires the presence of an alkali, and in the gastric juice would not only not act, but would itself in all probability be digested and destroyed as a ferment; and it is of no value except for the preparation of predigested foods. —Wood, "Therapeutics; Its Principles and Practice," 798-800.

PLANT DIGESTION.

Since Darwin first called attention to the fact, thirty years ago, that certain plants of the genus *drosera* (sundew) put forth the same, or nearly the same complex secretion as do animals, adapted for the same purpose of digestion, scientific interest in enzymes of vegetable origin has led to investigations and discoveries which must prove of great practical value to the physician. Initial observations were made on the so-called "insectivorous" or "carnivorous" plants, especially the *nepenthes* (pitcher plants), it being shown that they secrete an acid juice which dissolves flies, and that it is analogous to the gastric juice of animals. Darwin, himself, demonstrated that these plants have glands which secrete a digestive fluid capable of dissolving nitrogenous compounds. It has since been estimated that there exist

about five hundred of these forms which have the capacity of deriving their nitrogenous intake in part through dissolution of animal organisms or organized albuminous substances. (Cf. Gillespie, *The Natural History of Digestion*, 1898, 42.)

In studying the physiology of plants, it has been discovered that seeds not only possess proteid-dissolving ferments, but also diastatic enzymes, by the agency of which the insoluble reserve carbohydrates are rendered soluble and portable during the growth of the plants. In the *Zeitschrift für Physiologische Chemie*, xxxii, p. 1, Butkewitsch has this to say: "The detection of proteolytic enzymes in seeds, and the study of the changes which can be inaugurated by them, leave little doubt that they play an important part in the proteid metabolism incidental to the germinating processes. Through them the proteid reserve materials are rendered active, and various typical products of proteolysis have already been isolated from seedlings." In this field, the investigations to which Schulze and his co-workers have contributed no small share, make it quite probable that proteolytic enzymes are widely—perhaps universally—distributed in plants. "They occur," says Prof. Mendel, "in bacteria, in fungi, and in various parts of fully developed higher vegetable

forms, as well as in seeds." (Cf. *The Amer. Jour. of the Med. Sci.*, Aug., 1902.)

Within the past year according to the *London Chronicle*, Prof. S. H. Vines, Sherardian Professor of Botany, gave the Linnæan Society an account of some of his observations upon the action of the enzyme or ferment contained in the secretion of the pitcher plant. This enzyme, he explained, not only possesses the property of peptonizing the higher proteids (fibrin), but is also proteolytic, decomposing the non-proteid nitrogenous substances, such as leucin and tryptophane. More recently he has investigated many other plants to ascertain whether or not a digestive enzyme were present, and to determine the nature of its action. In almost all cases the presence of a proteolytic enzyme was demonstrated by him. In the first instance, plants which were known to possess a peptonizing enzyme, were made the subject of experiment, and were in all cases found to be proteolytic. This is true of pineapple juice, of the fig, of the milk of the cocoanut, and of yeast.

"Finding this to be the case," says the *Chronicle*, "Prof. Vines carried his investigations further, namely, to *different parts* of plants.

* * * It was found that with few exceptions an enzyme was present which proteolyzed peptone

in from four to twenty hours. in 1879, and later by S. Martin, Chittenden, and others. Among the plants and parts of plants investigated were melon, cucumber, tomato, marrow, grapes, pear, orange, banana, leaves of lettuce, green peas, onions, potato, cabbage, turnip and mushroom.

Having established the presence of a proteolytic enzyme Prof. Vines considered the next step was to ascertain whether these plants were capable, like the pineapple, fig, etc., of peptonizing the higher proteids. These experiments definitely established the fact, says Prof. Vines, that an enzyme which actively proteolyzes the simpler forms of proteid is present in all parts of the plant body. But the precise nature of this enzyme is doubtful. Where proteolysis is accompanied by peptonization it may be inferred that the enzyme is allied to the trypsin of the animal body. Where no peptonization, but only proteolysis, can be detected, it seems probable that the enzyme is allied to the crepsin recently discovered by Cohnheim in the small intestine. Possibly more than one enzyme may be active in certain cases."

"The proteolytic enzyme present in the fruit and various parts of the melon tree (*Carica Papaya*)," says Prof. Mendel (Cf. *The Amer. Jour. of the Med. Sci.*, Aug., 1902), "has attracted particular attention. It was investigated by Wurtz

This enzyme was introduced into medical practice several years ago, and commercial preparations of the papaw containing it have at various times met with considerable favor under different names, such as 'Caroid,' etc. A similar enzyme has been detected in the latex of the common fig (*ficus carica*); and from the fruit of the pineapple (*ananassa sativa*) there can be isolated a proteolytic enzyme which has been carefully studied. Quite recently the proteolytic enzymes of yeast and of barley have become the subject of considerable scientific discussion.

The development of more recent researches in physiological chemistry," continues Prof. Mendel, "has brought out many new facts regarding the proteolytic enzymes of animal origin. A better acquaintance with the products of proteolytic changes and the study of autolytic or auto-digestive processes in various organs have modified older views. But all of this knowledge has only tended to emphasize more than ever before the importance of enzymes for the functions of living organisms. In an interesting lecture on the chemical make-up of cells, Hofmeister has pointed out that our growing acquaintance with the wide distribution of enzymes in organisms

and with their manifold functions leaves little doubt that sooner or later there will be discovered a specific enzyme appropriate for every vital chemical reaction."

—:o:—

CRITICAL REVIEWS.

DIETETIC TREATMENT OF SCARLET FEVER.

In an interesting paper which recently appeared in *The Medical Critic*, Dr. Louis Fisher, Visiting Physician to the Willard Parker and Riverside Hospital, New York, states that, in his opinion, the treatment of scarlet fever can best be divided into three distinct parts; viz.:

"*First*—From the time of the appearance of the eruption until the rash is fully developed.

"*Second*—During the period of desquamation, which usually lasts from two to four weeks.

"*Third*—The stage of convalescence."

I. TREATMENT OF FEVER.

For the treatment of the fever during the first stage, he recommends that the child be put to bed, dressed in flannel or woolen clothes, so that the skin shall be properly protected. The room should be well aired and kept at a temperature ranging from 65°F. to 74°F. He believes that the use of antipyretic drugs, for controlling the violent symptoms of the fever, is not advisable; nor does he think that cold baths, cold packs and other similar anti-ther-

mic measures should be employed. He believes that the best results are obtained by the administration of diaphoretics, such, for example, as

R. Spir. mindereri, ℥ ij.
freshly prepared, in doses of one-half to one teaspoonful, diluted with an equal quantity of boiled water; this may be sweetened, if the taste is disagreeable, by adding one grain of saccharin. The dose should be repeated every hour until sweating occurs. If muscular twitchings or other symptoms of spasm are present, an ice bag to the head, and a mustard foot-bath will give good results. The mustard foot-bath may be repeated every two or three hours, being especially indicated if evidence of stupor or somnolence accompany a high degree of fever.

Dr. Fisher alludes to vomiting as being usually one of the first symptoms, which is very distressing. Here, he believes, regulation of the diet is of the greatest importance. Young children previously accustomed to solid food should now be given liquid foods—the best adapted of which are milk, properly peptonized, and broth—and if the child has previously been fed every three or four hours, it should now be fed once in six. Cracked ice, too, will be found very acceptable, and is advantageous in checking nausea.

In rare cases, the vomiting may be so severe that no food, solid or liquid, can be retained. In these conditions, the writer has often discontinued all medication and feeding by the mouth for a period of twenty-four hours and resorted

to rectal feeding, with good results. All food for this purpose must, of course, be predigested—inasmuch as the rectum cannot digest food, but only absorb it—and this is best done, he believes, by adding to it some pancreatin and soda, in the form of the ordinary peptonizing tubes made by Fairchild.

For nutrient enemata, two kinds of foods are used by him: Peptonized milk, and peptonized yolk of egg. "To prepare an enema take two ounces of peptonized milk, and add two ounces of thickened starch water. Mix, and inject slowly through a rubber catheter. Peptonized yolk of egg is prepared in exactly the same way. Some authors recommend adding gum arabic solution to the peptonized milk, and the writer has found this, as well as the starch water, very good. It is also well to alternate the nutrient enemata."

In summing up the points in the treatment of the first stage, Dr. Fisher says: "We should endeavor to re-establish the normal functions of the bowels, the kidneys and the skin, and to strengthen the body with concentrated foods, consisting chiefly of milk; soups, broths, and fruit in moderation, if these are tolerated. When there is severe itching, it can be lessened by rubbing the whole body with a weak carbolized vaseline, one-half per cent. twice a day."

2. TREATMENT OF DESQUAMATION.

In this stage, when desquamation begins, the inunction with carbolated vaseline, just mentioned, is indicated. Bichloride baths and mechanical treatment with

non-irritating solutions, such as lukewarm salt; a one per cent. boric acid, or a weak permanganate of potassium solution, are also beneficial.

3. TREATMENT DURING CONVALESCENCE.

The most important point in the third stage of this disease is to have the body properly clad in woolen or flannel clothing, the body—because of the skin exposed by desquamation—being more susceptible to cold. Chilling the surface should be guarded against by anointing the body with oil or vaseline.

"Next in importance," says Dr. Fisher, "is attention to the diet. Milk should form the bulk of the food, to which buttermilk and kumyss will be found useful adjuvants. Soups, broths and acid fruits, such as lemons, oranges, grapes and apples, may be given, as also jellies, fruit jellies, calf's foot jelly, oysters, fish and vegetables—of which latter, asparagus, celery and parsley are very valuable because of their diuretic effect; cranberries and cranberry sauce may also be used. Cereals, such as oatmeal, hominy, farina, cream of wheat, shredded wheat with milk, rice, farina, tapioca and cornstarch puddings, as well as custards, or occasionally a soft-boiled egg, may be eaten. It is not well to give children too much nitrogenous food, hence meat should be omitted."

EDITORIAL REMARKS.

It will be observed that in the dietetic treatment of the first stage

of the fever, when vomiting is so prominent a symptom, Dr. Fisher believes that the child should be fed exclusively on milk, "properly peptonized." While we are quite willing to agree with him as to the advisability of this plan, yet we would suggest a simpler and much more effective method of "peptonizing" than that which he recommends. Instead of employing "pancreatin and soda" or other animal ferments, which require extreme care in the adjustment of temperature necessary to the securing of satisfactory results, we would advise the use of Caroid, which acts in a wide range of temperature—i. e., from 40° to 190°F.

Caroidized milk has already been used extensively in the dietetic treatment of bottle-fed infants—e. g., in intestinal disorders and in typhoid fever, as well as in convalescence from various diseases—and is readily and quickly prepared, as follows: Fresh, pure milk—modified, if advisable, to the desired condition of dilution and to proper percentages of fats, proteids and sugar—is heated until lukewarm; and, to each feeding of three or four ounces, two grains of the powdered Caroid are added, previously dissolved in a teaspoonful of water. In two or three minutes a curd has formed, which, by stirring, is practically re-liquefied. This is then fed in the ordinary nursing bottle—each feeding

being predigested at the time of its use. For convenience, the Caroid has been put up by the manufacturers in the form of paquettes, similar in character to the peptonizing tubes recommended by Dr. Fisher.

Milk predigested in the same way, may be used in rectal feeding. Or, if egg should be preferred, it may be caroidized in the manner suggested by Dr. Rottner, as follows: "Break a fresh raw egg into a saucer and stir with a spoon—the white and yolk intermingling, the white retaining its identity through the mixture as broken up. After stirring the egg, add to it three grains of Caroid, stirring same thoroughly into it. The yolk is at once changed into a limpid liquid, and soon, though not so quickly, the albumen is completely dissolved and changed,—all this at a temperature of from 70°–80°F." The simplicity of this plan of digesting egg albumen must commend itself to all who have had experience with the troublesome pharmacopœia method, as ordinarily attempted with animal pepsin. Egg, thus caroidized, may of course be used, if desired, in the feeding of adults in cases of convalescence.

In the home predigestion of cereals and other starchy foods, Dr. Rottner has given preference to the new digestant—Bana-Diastase. This is also—like the "Caroid

Peptonizing Powders"—put up in the form of paquettes for ready use,—i. e., each tube containing a measured quantity of the ferment sufficient to malt an ordinary portion of food required for a single meal. For the details of the method of its employment, in predigesting rice, peas, beans and other carbohydrate foods, we would refer to the formula published by us in the November (1902) issue of the REVIEW, p. 208.

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CORRESPONDENCE DEPARTMENT.

Our readers are cordially invited to make free use of this department. Queries regarding the enzymotic action of vegetable ferments and their use in the treatment of disease—or any other question which comes within the scope of THE ALIMENTARY REVIEW—will be cheerfully and promptly answered. We also solicit clinical reports illustrating the action of the vegetable digestive, Caroid, in the treatment of cases, and will be glad to publish the same in this department for the benefit of our readers who may wish to further investigate the subject. Answers to questions of a medical nature will be given only to medical men.

Letters intended for this department should be addressed to "Editor ALIMENTARY REVIEW," care of The American Ferment Co., 81 Steuben St., Jersey City, N. J.

HAS PROVEN VALUABLE.

The American Ferment Company.

GENTLEMEN: Allow me to thank you for the Caroid preparations sent me several days ago. I have tested them and I must say that Caroid, in my hands, has proven valuable when the stomach fails to digest. I hope other physicians will give Caroid a trial. Allow me to thank you again.

Respectfully,

W. L. PUSLEY, M. D.,

Morrillton, Ark., Mar. 25, 1902.

ACTS IN ALL MEDIA.

The American Ferment Company.

MY DEAR SIR: I have found that Caroid fills the bill. The great desideratum is to secure a ferment which acts in, all media—acid, neutral and alkaline. We need all in various forms of dyspepsia; and, in the fermentative distension of typhoid, it is often all we require. I have given the matter much attention. I would be glad to have more samples of your Tablets of Caroid and Charcoal, as well as of the Nux Vomica. Am always glad to get THE ALIMENTARY REVIEW. With much respect, I am,

Yours respectfully,

ARCH. ATKINSON, M. D.,

Late Prof. Pract. of Med., Baltimore Med. College; Specialist on Diseases of the Stomach and Bowels.

NOTE: It is the consensus of opinion among recent medical writers and stomach specialists, as well as among the members of the profession who are in general practice, that, in order for a digestive ferment to prove of any practical utility in the treatment of alimentary diseases as they are met with in every day work, it must be enabled to exert its enzymotic power irrespective of the chemical environment to which it is exposed; that is, it must act, as Prof. Atkinson says, "in all media—acid, neutral and alkaline." The fact has become generally

recognized that the failure to digest food in disease is not due usually to a lack of pepsin formation (which is generally present in sufficient amount, yet inactive), but to a change in the character and amount of the gastric and intestinal secretions, resulting in a different chemical solution or mixture than the one intended by nature for pepsin to act in, i. e., there is too little or too much acidity. The introduction, therefore, of more pepsin to meet these same unfavorable conditions is manifestly irrational and unscientific. Our object, in such a case, is to aid the temporarily disordered digestive apparatus to dispose in a proper manner of the food ingested into it, until the relief afforded in this way has given it an opportunity to recuperate and thus perform its own work.

To do all this, and to do it satisfactorily, it is essential that the digestant administered shall act upon all classes of food products—proteids, fats and carbohydrates, and in the acid secretions of the stomach as well as in the alkaline intestinal juices. It must disintegrate and render fit for absorption into the circulation, any variety of food taken and in any medium. It is owing principally to its virtue in this respect that the vegetable digestant, Caroid, has found favor in the eyes of the stomach specialist and has superseded both of the animal ferments, pepsin and pancreatin, and besides, is now being prescribed with satisfaction by many physicians who had begun to doubt the efficiency of artificial digestives in their clinical work.

The field for the employment of this ferment is a large one, and we believe the time is not far distant when it will be considered one of the most essential remedial agencies to be found in the physician's *armamentarium*.—[EDITOR.]

BEST PREPARATION EVER USED.

The American Ferment Company.

GENTLEMEN: About one month ago, I had you send me 500 each of "Caroid and Soda" and "Caroid Laxative" Tablets, the use of which I have found most gratifying. It is, beyond a question, the *best* preparation I have ever used. Please send me by return mail two (2) ounces of the "Essence" (liquid) of Caroid for use in the indigestion of infants. If I find it as useful as the other preparations, I cannot, by any means, do without it in my practice. Send the bill and dosage of this preparation. Thanking you for all past kindness, I am,

Yours truly,

L. S. GREENE, B. S., M. D.,

Elma, Miss., Mar. 28, 1902.

ANSWER: The cost of the Essence of Caroid, put up in half pint bottles, is one dollar. The dose varies from twenty drops to a teaspoonful, according to the age of the patient.

In his report of "Fifty Infants Treated with Caroid," Dr. Russell Pemberton, Physician in Charge, Out Patient Department St. Mary's Free Hospital for Children, New York City, states that he employed the Essence in the treatment of a number of the cases under his charge at the clinic, and always met with most excellent results. In a child sixteen months old, he ordered that the Essence be given in half-teaspoonful doses after each three hour feeding with milk and lime water. After three days

treatment, "the child was so much better," he says, "that a somewhat larger amount of food was allowed, and the dose of Caroid Essence diminished to twenty drops." The patient, in this instance, was a bottle fed infant, "ill nourished, puny, anæmic, and with many furuncles; tongues swollen and red, with several ulcers; gums red, swollen and tender; had always been somewhat constipated, though occasional attacks of diarrhœa occurred." Notwithstanding the fact that this child had been "treated in another dispensary for more than two weeks, and was said to be getting worse," yet, within a week after adopting the plan above described, marked improvement was observed, and at the end of another week "the case was dismissed." Dr. Pemberton states, that in some instances, the milk was caroidized before feeding; i. e., to each feeding of eight ounces, one or two grains of powdered Caroid, or a teaspoonful of Caroid Essence was added; and, when the curd had set, (which occurs within two or three minutes), the mixture was beaten up with a fork or spoon until it was almost re-liquefied, then fed as usual.—[EDITOR.]

FOR OCCASIONAL GASTRIC DISTURBANCES.

The American Ferment Company.

GENTLEMEN: I must again thank you for the Caroid, which always does me so much good when I am suffering from occasional gastric disturbances. I never fail to speak a good word for your product when occasion presents, and you have justly earned the gratitude of the pro-

fession in thus affording so useful an agent to suffering humanity.

Very sincerely yours,
AMERICAN MEDICINE PUBL'G Co.,
Per H. M. Simmons,
Philadelphia, Pa., Sept. 19, 1902.
1351 Walnut St.

NOTE: It has been very gratifying to receive this hearty endorsement from a gentleman so well known to the medical profession of this country, and we wish to direct especial attention to his statement, concerning the effects derived from the use of Caroid, "when suffering from occasional gastric disturbances." By the phrase, "*occasional gastric disturbances*," is meant that disagreeable condition of affairs which arises from our various dietetic indiscretions, and which is usually termed "indigestion," "dyspepsia," "flatulence," "fermentation," "heartburn," "gastric catarrh," etc. In other words, whenever symptoms exist which indicate that a portion of the food ingested remains unabsorbed in the stomach, or, if finally absorbed, had remained so long as to have caused fermentation, the administration of a few grains of Caroid seldom fails to afford prompt relief. People who are subject to these "occasional gastric disturbances" have learned the efficacy of this treatment, and it has now become a custom with many of them to keep a supply of the Tablets at hand for ready use—especially after a hearty meal. Physicians themselves, have adopted this plan in many instances, and find that it serves them well (as a prophylactic measure) after one of their "indiscretions"—such as follow a "medical banquet." From

three to five grains of the powdered Caroid, or two of the Tablets, "Caroid and Charcoal," or "Caroid and Soda," are usually taken in these cases, immediately after the "indiscreet" meal.

BANA-DIASTASE.

The American Ferment Company.

GENTLEMEN: I send herewith enclosed sixty (60) cents, in stamps, for which kindly send me one ounce of Bana-Diastase. The samples of your Caroid preparations received on the 20th ult., have given excellent satisfaction, and I will continue to use the same.

Respectfully yours,

WM. J. DICKEL, M. D.,
Philadelphia, Pa., Oct. 9, 1902.
1302 E. Columbia Ave.

ANSWER: We have taken pleasure in forwarding you one ounce of Bana-Diastase, as per your order. We are also pleased to inform you that we are putting up this ferment in air-tight sealed tubes, called paquettes, for the convenience of physicians, who wish to employ the Diastase for converting starchy foods. To use a paquette, all that is necessary is to cut off one end and empty the contents into the food to be converted. The paquette is very similar in form to the ordinary peptonizing tube and contains a measured quantity of the ferment sufficient to malt or dextrinize the usual portion of food required for one meal. Three grains of Bana-Diastase (previously dissolved in a dessertspoonful of water) will easily convert one ounce of rice, or of the cereals, etc.—its diastatic value being of the strength of 150-1, instead of 5-1 as is the case with the strongest "malt extracts."—[EDITOR.]

ESSENCE OF CAROID.

The American Ferment Company.

GENTLEMEN: Would you favor me with a sample bottle of your Essence of Caroid? It has been recommended to me. I have a child that is greatly troubled with gastritis. Have made inquiries in several drug stores in this city, but no one seems to know the goods. By favoring me with a sample bottle, you will oblige.

Respectfully,

J. A. BECKER, M. D.,
Philadelphia, Pa., Oct. 29, 1902.

ANSWER: Concerning the use of the Essence of Caroid, in the treatment of gastric and intestinal disorders of infancy, we would refer to our "Answer" to Dr. Greene, on a previous page of this issue, and also to the article, entitled "Caroid in Maldigestion of Infants," by Arthur W. Condict, M. D., of Dover, N. J., which appeared first in the *Philadelphia Medical Bulletin* and was afterward published by us, in Vol. 1, No. 2, of THE ALIMENTARY REVIEW, page 76. Dr. Condict says: "The Essence is a permanent and palatable solution of the Caroid ferment, which I have found especially serviceable, and which, when properly indicated and applied, has not failed to relieve any cases of maldigestion, howsoever severe or various the symptoms may have been. Another point in favor of the Essence in these cases, is the trouble saved in preparing the Caroid Powder itself for the babies, nurses being proverbially careless and inefficient in attending to such duties." Aside from its use as recommended by Dr. Condict—also by Dr. Russell Pemberton, as quoted in our answer to Dr. Greene—the Essence is an

especially valuable *vehicle*, and may be employed as a base in which to administer the various other drugs which may be indicated in the treatment of these cases.—[EDITOR.]

tion to the subject, and finally convince him that it is his duty (to himself and to his patient) to afford a fair trial in his practice of the vegetable ferments recommended in these pages.—[EDITOR.]

NO SUBSCRIPTION PRICE.

Editor Alimentary Review:

I have received several numbers of your ALIMENTARY REVIEW, the last number being the July number, and I completely fell in love with it. I have been using the Caroid preparations quite extensively wherever indicated, and, within the last week, have been taking Caroid myself for a painful and heavy feeling in the stomach several hours after eating, or when the stomach is empty, and I have obtained *very great* relief from it. I would be pleased to receive the REVIEW regularly, and am ready to pay for it.

Yours truly,

F. P. BATDORF, M. D.,
Farmersville, Mo., Oct. 23, 1902.

ANSWER: We feel highly gratified at the favorable reception which has thus far been accorded the REVIEW by the members of the profession, and trust that the interest already excited in this respect may continue; but, as we have stated before, there is no subscription price attached to it. The REVIEW has been published in its present form and mailed gratis to physicians, in order to bring to their attention, in a scientific manner, the claims that are made by The American Ferment Company for their various digestive products. They have felt the necessity of presenting to the physician something more convincing than can be found in the ordinary advertising pages of medical journals; something of sufficient merit to attract his earnest atten-

CAROID SOLVENT.

The American Ferment Company.

GENTLEMEN: Is Caroid Solvent used with benefit in spray for catarrh? Send price of same. Also send price and description of your indigestion tablets, and oblige.

Yours truly,

G. W. FERRILL, M. D.,
Thomasville, Ga., Oct. 24, 1902.

ANSWER: From the small data in our possession we cannot recommend the use of the Caroid Solvent in catarrhal troubles, although we understand that Dr. Arthur G. Hobbs, a well-known laryngologist, of Atlanta, has employed it with exceptionally gratifying results as a solvent in atrophic rhinitis and other naso-pharyngeal diseases characterized by tenacious or fetid secretions. Its use is principally indicated, however, for the purpose of dissolving and peptonizing fibrin—as in the false membrane of diphtheria, and even for the removal of powder stains and tattoo marks. The Solvent, as specially prepared, is in every respect the most effective agent that can be employed for the cleansing and removal of all dead organized tissue, pus or various tough and fetid secretions. Its price is fifty cents per bottle.

The description and price list of the various combinations of Caroid, in tablet form, for use in the treatment of indigestion, will be

found quoted in full on one of the advertising pages at the close of the present issue.—[EDITOR.]

INFANT FEEDING RULES.

The American Ferment Company.

GENTLEMEN: THE ALIMENTARY REVIEW, Vol. I, No. 4, received, and a reading of it has proved profitable and thoroughly interesting. Kindly send me the earlier and subsequent issues to date. The original essay, "Home Predigestion of Food," in the issue at hand, is an exceptionally practical article, and I am pleased to have had it brought to my notice.

Yours cordially,

J. W. Fairing, M. D.,

Springfield, Mass., Oct. 24, 1902.

24 Winchester St.

ANSWER: Although Dr. Rottner's article, "Home Predigestion of Food," referred briefly to his method of preparing meat and rice, it was not until the publication of the next issue of the REVIEW, (Vol. I, No. 5), the November (1902) number, that the details were given in full, (p. 208) under "Directions for Preparing Predigested Food from Fresh Material," to which we would direct your attention. The formulæ recommended by Dr. Rottner are simple and practical in their application, and may be readily utilized by the general practitioner in his every day work.

The rules for infant feeding, as given by Dr. Russell Pemberton, Physician in Charge, Out Patient Department, St. Mary's Free Hospital for Children, New York, will be found in his article, "Fifty Infants Treated with Caroid," published in our "Typhoid Feeding Number," (Vol. I, No. 3), p. 123.

It should be borne in mind that Caroid has the most rapid action upon milk casein of any of the proteolytic ferments, hence milk peptonized with it should be immediately used—i. e., it is usually advisable to prepare each feeding fresh at the time of using. The "caroidized" milk is now being employed by many pediatric specialists in their practice, and is easily and simply prepared as follows: To a quart of pure, fresh milk, heated until lukewarm, add six grains of powdered Caroid (previously dissolved in a teaspoonful of water), or two teaspoonfuls of Caroid Essence. After the curd has set (which happens within two or three minutes), beat up with a fork or spoon until it is almost re-liquefied. Then feed immediately through the ordinary nipple. The advantages of milk so treated are: 1st. Tough, indigestible curds are avoided; and milk cannot be re-curdled after such treatment. 2d. The conversion of the curd into assimilable products is rapidly accomplished within the stomach. —[EDITOR.]

FEWER FEES, BUT PROMPT RELIEF.

The American Ferment Company.

GENTLEMEN: I am in receipt of the last lot of Tablets sent me and thank you for your promptness.

From my own *personal* experience, I have never had any reason to complain of inefficiency, and since using Caroid I have been more comfortable as to my stomach, and have eaten my meals with more regularity and enjoyment than I have in thirty years. Also in my practice I have prescribed Caroid in at least one hundred cases and invariably with benefit. Only

yesterday, a middle-aged lady patient, a widow of stout habit and often guilty of imprudent indulgence of her appetite, thanked me for the relief I had given her.

The only complaint I have to make about *Caroid* is that I do not get as many fees in these cases as I formerly did, because it gives such prompt relief. But such is the true physician's desire.

Wishing you large increase of sales, I am,

Yours truly,

W. C. KLOMAN, M. D.,

Baltimore, Dec. 5, 1902.

808 North Ave. West.

—:O:—

CLINICAL ARTICLE.

A CASE OF MEMBRANOUS ENTERITIS SUCCESSFULLY TREATED BY THE USE OF CAROID.

BY E. L. BRAUNWARTH, M. D.,
MUSCATINE, IOWA.

(Reprinted from *Canadian Journal of Medicine and Surgery*, March, 1901.)

Probably in no other disease of the intestinal tract do we find the etiology and pathology so obscure as in the peculiar affection known as "pseudo-membranous enteritis." The disease was doubtless occasionally met with in practice, yet no distinct account of it occurs in the medical writings of the ancients, nor even in works dating down as late as the 18th century. Indeed, it was really not until the beginning of the 19th century, that it had any recognized place in nosology. Aretæus, writing in the second century, speaks of the alvine discharges of dysentery as sometimes containing a substance of considerable length, which in many respects could not be distinguished from a sound piece of in-

testine, and which he regarded as the inner coating of the bowel. Similar erroneous views were held in turn, by Simpson, Morgagni, Lancisi and Spingles; while Bauer, in 1747, discusses the subject under the title of "intestinal moles." These various authors, however, were evidently referring to the exudate (which occasionally assumes a tubular form) characteristic of the disease, which Powell, in 1818, discriminated from other affections having like general symptoms; and which has been specifically recognized under the term "membranous enteritis."

As to its cause, there has been in this, as in other diseases of obscure nature, much divergence of opinion. It has been found, however, that sex, in some way, exerts a marked influence, for in an analysis of one hundred cases, four, only, occurred in males. They, who have investigated the subject to any extent, agree in the opinion that the victims of the disease are mostly women, between the ages of thirty and fifty, who have been subject to ovarian troubles or menstrual irregularities. Temperament, too, is evidently a very important factor, it having been observed that nervous and hypochondriacal patients are peculiarly susceptible. Any enervative influence, however, that degrades physical health and impairs nerve power, may be considered a causative agent; for those, who are deficient in elasticity of fibre, compose all but a small percentage of the cases. But, whatever may be the determinative cause, perversion of nutrition and innervation

of the gastro-intestinal canal invariably co-exist.

In regard to the exudate itself, some believe, as did Powell, that it is the result of croupous inflammation, though the membranous, ribbon-like mass, being composed principally of mucin instead of fibrin, can hardly be considered croupous or diphtheritic in character. DaCosta and other observers were inclined to ignore the inflammatory nature of the disease altogether, believing that the true trouble is in the ganglionic nervous system,—in the nerves presiding over secretion and nutrition in the abdominal viscera. The configuration of the exudate varies greatly in different cases: in some appearing as transparent, jelly-like masses, resembling white of egg; in others, as yellow-white, shreddy pieces, like macaroni; and in still others, as tubular casts of the bowel itself.

While the prognosis of this disease is not considered unfavorable as far as life itself is concerned, yet as regards permanent restoration to health and strength the case is entirely different,—such deep inroads upon nutrition and the vital powers usually being made, that the results of treatment, so far as yet reported, have been very unsatisfactory. As one writer states, however, it is evidently our duty in the treatment;—"first, to remove the membranous exudation when it has once formed; and, second, to correct the conditions upon which its formation depends, by improving nutrition and invigorating the nervous system." Hygienic measures should also be ob-

served; the diet being graded to the ability of the stomach to digest and the body to assimilate, while bathing, massage, exercise and change of climate are all important factors. In the following case the treatment was so eminently satisfactory, that a brief report of it is submitted here to encourage investigation by others along similar lines:

Mrs. K., American, æt. 28, a pale, nervous, delicate woman, five feet two inches in height and weighing ninety-seven pounds, presented herself for treatment for a disease from which she said she had been suffering two and a half years,—the greater part of this time under the care of physicians. The patient was the mother of two children, aged eight and ten years respectively. She complained of the following symptoms: belching gas, bloating and palpitation to a distressing extent after eating, irrespective of the character of the food, or whether she dieted or not. Pains in the abdomen were of a bearing down or colicky nature, especially before an evacuation of the bowels.

The patient stated that at one time she passed a ribbon-like mass of mucus, sixteen inches in length by actual measurement; which, when shown to a physician, was pronounced to be tapeworm and treated as such. She said that when taking strong physic, none of the exudate appeared in the passages, but when she stopped it would always return. Growing constantly worse, she finally consulted me at my office, bringing specimens of mucous, ribbon-like

masses, eight inches long, light gray in color, some of which were irregular in form and friable. She often passed from one-half to one pint at a time, occasionally without pain; but most of the time there was pain of a colicky nature in the lower abdominal region on the left side, also in the uterus, ovaries and down the limbs. After the administration of a physic, the mucous exudate would accumulate in the rectum and be passed first, then followed by the bowel contents, the latter being occasionally mixed.

The patient was always able to come to the office, although she complained of having "weak spells," especially at night when left alone,—suffering with nervous chills, nausea and, occasionally, headache and backache. Her menstruation was usually regular; while obstinate constipation was the rule. Such were the symptoms of which she complained; and, although for some time the rules of dieting and hygiene were closely observed; and alteratives, such as Fowler's solution, were given; while tonics, such as iron, quinine, strychnia, etc., besides digestives, eliminators, and nerve sedatives (which were always necessary) were also prescribed,—still these mucous discharges continued.

Routine treatment, as above described, had been persisted in for a number of weeks, without results; until, finally, one day, having noticed in Prof. Hemmeter's work ("Diseases of the Stomach," p. 346), favorable reference to Caroid, the digestive ferment of *Carica Papaya*, I

decided at this stage to try it. I at once ordered the following in Tablets, and requested the patient to report results:

R Caroid, gr. j.
Charcoal,
Boric acid, aa gr. iss.

Sig. Two Tablets after each meal.

A few days afterward, she appeared with a smiling countenance, and stated that she had obtained more relief from that medicine than any other she had ever taken. I decided that, inasmuch as the Caroid with Charcoal had done the work, it also should have the credit, and ordered a continuance of the treatment. She took the Tablets after meals, as directed, with a warm water enema every night.

Nine months have now elapsed since this patient began her treatment with me, during the last four of which, though no Caroid and Charcoal Tablets have been taken, she has passed no mucous masses of any description. Her bowels are regular, food is thoroughly digested, she eats well, sleeps well, and is very thankful for the relief given her. This and other experience of later date, have convinced me that in Caroid, we have a certain solvent of any and all organic matter within the alimentary tract, and a remedial agent of no ordinary worth and application.

The benefit derived from the use of Caroid ferment in this case, would seem to have been due, *first*, to its enzymotic power to digest all classes of food products; and *second*, to its action in prevent-

ing the formation of the membranous exudate in the intestines, or in dissolving it when once formed. Its power to dissolve the false membrane of diphtheria, is already well understood, and its action upon the mucous exudate in the present case, was doubtless of a similar nature. Its special indication, however, in cases like that we are considering, is to supply the lack of chemical or physiological action on the part of the natural digestive ferments, the latter, as is well known, being always deficient in membranous enteritis. The result of this deficiency is maldigestion, with all the accompanying symptoms due to fermentation,—nausea, flatulence, gastralgia, constipation, etc. Through the administration of Caroid, therefore, the foregoing symptoms are wholly ameliorated; the food contents of the stomach are thoroughly digested; extraneous mucous formations in the intestinal tract are dissolved; while, at the same time, a tonic and sedative action on the secretory membrane of the stomach is produced, resulting in an increase of the appetite and a relief from pain following the ingestion of food.

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A HINT FOR LARYNGOLOGISTS.—
“I have a severe cold,” said the sweet singer. “I shall have to use a cough syrup.”

“Use only a tar syrup,” spoke up the manager.

“Does it make any difference?”

“Yes, everything depends on the pitch of your voice.”—*Ex.*

RECITAL OF CASES.

CAROID IN INFANT PRACTICE.

CASE VI. Eight weeks of age; child in good condition. This child was nursed until two weeks ago, when the mother was taken with a persistent diarrhoea, and lost her milk. Child was then put on diluted condensed milk, which was soon changed to pasteurized milk, one in two, with lime water. Child well nourished, but has persistent constipation with marked flatulence. Stools when passed were never green, but were “lumpy,” and caused much pain.

Eight tablet-triturates of calomel, gr. 1-10, were prescribed at intervals of one hour, and the mother was told to administer a teaspoonful of castor oil every second night. Feeding was not changed, except that it was to be given more regularly—three ounces every two and a half hours.

In a week the child was brought back with the report that the bowels had moved easily, but that considerable colic was still present. Powders of Caroid, gr. $\frac{1}{4}$, with milk-sugar, were ordered after each feeding, and the oil continued. In about ten days the child was seen again. She had meanwhile had only one attack of colic, but seemed to be hungry all the time. The stools had been so good that four ounces of the milk mixture were ordered (to be gradually increased), and the Caroid Powders changed to gr. ss each. A week later the stools were regular, and she was rapidly gaining weight.

CASE VII. Eight weeks. Child in fair condition. Fed with modified pasteurized milk. This child was brought by the mother on account of a diarrhoea of about four days' duration, accompanied by severe vomiting. Previous to that, child had suffered from constipation. There had been much flatulence and straining. Tongue heavily coated; abdomen distended. (This case was in reality quite similar to-case vi, but had reached a later stage when first seen.)

Treatment: ten tablet-triturations of a sixth of a grain of calomel were ordered at half hour intervals. One-half grain Powders of Caroid were to be taken after each feeding, these feedings during the next day to be every three hours, and after that every two hours.

Three days later it was found that curds were still being passed; the flatulence was less, though still marked. Another course of calomel triturations was instituted, and the Caroid increased to gr. j after each feeding. This case then commenced to show improvement, and has gradually become better, but is still under observation.

CASE VIII. Eight weeks. Child thin and ill nourished. Three weeks after birth nursing was given up on account of obstinate vomiting. Several methods of feeding have since been tried, but vomiting is still frequent. Small doses of calomel have been administered, probably to advantage. Bowels very irregular, mostly constipated. A particularly weak formula of milk and lime water was prescribed, and no medicine thought advisable.

Two days later: some slight improvement, but only six or eight of the feedings retained during this time. Two grain Powders of Soda were ordered before each feeding, and half a grain of Caroid to follow the milk as soon as given. This served well, except that the bowels became too loose. The Soda was then reduced to gr. j.

A week later: the bowels still moved three or four times a day, but contained no curds. Child much better. Soda stopped, and gr. ss of Caroid continued, with instructions for partially predigesting with Caroid in case it became necessary. It was not used, however, as the vomiting did not become pronounced enough to demand it.

CASE IX. Eight weeks. Child in fair condition, but somewhat anemic; breast-fed exclusively. For a week previous the stools had been sour-smelling, with occasional curds. Flatulence marked, tongue heavily coated, abdomen tympanitic. Vomiting had been frequent; no temperature.

An initial purge of calomel in eight gr. 1-10 doses was given. This was followed by a 3 j dose of castor oil. Powders containing gr. ss of Caroid were then administered after each feeding.

Two days later the child was decidedly better. He had meanwhile passed six stools, the last two being less sour. The Powders were ordered to be continued for a week.

This child was not seen for a month, when he was brought to the dispensary. He had done so well that the mother wanted to

know whether "those same Powders would be good for the whooping-cough?" It was found that there had been no more flatulence, and that the stools had remained regular.

CASE XI. Ten weeks. Said to have been well up to three weeks ago. Since then has been bottle-fed. Condition at present very bad; weak and anemic. Stools have been irregularly passed, are greenish at times, and foul; feverish for last few days; no temperature now. Tongue much coated; breath heavy. Has been vomiting constantly, and retains little, though many changes have been made in the modified milk used; prepared foods have also been tried. As castor oil had already been given, no cathartic was ordered. The baby was put on a very weak formula of milk, lime-water, etc., small feedings of this to be given every two hours. Before being diluted, the milk used to be treated with gr. j of Caroid for ten minutes.

In two days the vomiting had markedly diminished, though child did not vomit while at dispensary. The oil had only partially moved the bowels, and there had been no stools during the last twenty-four hours. Another dose of oil was recommended, with instructions to repeat in eight hours. Feeding as before.

Three days later: child in somewhat better condition. There has been little vomiting, (none during this day); the bowels moved two or three times a day, and were less green. No change made in for-

mula, but predigestion with Caroid was changed to gr. ss after feeding.

Two days later: Vomiting is slightly more than at time of last visit, but less than when treatment commenced. Bowels fairly regular. Feeding and Caroid continued.

Two days later: Vomiting appears to have stopped. Bowels still good. No change in treatment.

Five days later: Child has vomited but twice since last visit. Apparently quite normal. Proportion of milk in formula ordered to be gradually increased; Powders to be kept up during the ensuing week.

When seen one month subsequent to this, he was well in every way. Occasionally a short attack of vomiting would occur, but it had no especial significance.

CASE XII. Three months. Condition poor. Bottle-fed, but has recently been able to retain little, and "has fallen away to almost nothing." Bowels move with difficulty, but respond to castor oil.

Proper formula ordered, to be followed at each feeding by gr. ss of Caroid.

Two days later: Vomiting still persists—no improvement. Has had no movement of bowels. A weak saline injection was advised. The regular formula was modified to the extent of doubling the lime-water. This was evidently suitable, as the vomiting soon stopped. The child also improved otherwise, though injections were several times needed to correct the con-

stipation, and R. and S. was also used.

CASE XIV. Three months. Condition very poor. Breast, and malted milk. Mother's milk had become thin and bluish, and the malted milk had been added. The chief symptom was lack of nutrition, though the bowels had been out of order for some time. The mother is in poor health, and is probably tubercular.

Nursing was discontinued. And, as the artificial food had been either unsuitable or improperly given, that, too, was withheld. In its place a formula of top-milk with boiled water, lime-water and sugar, of a strength less than the child's age would normally demand, was ordered. Fearing this sudden change to cow's milk, even though in such dilute form, gr. ss of Caroid, with gr. j of Soda, was prescribed after each feeding. It was surprising how well the child took to this. In two days it was brighter, and in a week's time had gained in weight. Each seven days the formula was slightly changed, until the child was taking the strength proportionate to his age. The Caroid was then stopped, it being judged no longer necessary.

CASE XV. Three months. General condition good. Breast-fed exclusively. Brought to dispensary on account of frequent vomiting. Stools usually good, but about once or twice a week consist of several loose passages showing curds. Mother in habit of nursing child whenever he cries—with the customary bad result.

This was corrected, the intervals being made two and a half hours, with only one nursing during the night. Half grain Powders of Caroid were given after each feeding. These were continued for three weeks, during which time the mother only once noticed curds in the passages, and these were not associated with any systemic symptoms. The vomiting stopped entirely; since then the case was lost to notice.

CASE XVI. Four months. Condition rather poor. Tongue heavily coated, eczematous lesions over entire head and both ears; also on anus. Breast-fed until two weeks ago, when mother thought her milk was getting poor, and substituted ordinary cow's milk, as much as the child would take at a time. The milk was later mixed with boiled water, half and half. Various infant medicines had also been given; castor oil had been used freely, also paregoric.

Treatment: An ointment for the eczema. Calomel triturations of gr. 1-10 were to be administered every hour for ten doses, during which time all feeding was to be suspended. The child was then to have every three hours four ounces of a formula containing about fifty per cent. milk, followed by gr. j. Powders of Caroid.

When seen the next day, there was no marked improvement. The fever was less, but vomiting had kept up pretty steadily. The bowels had moved abundantly, and the odor from them was extremely offensive. Until further notice, a tenth of a grain of

calomel was to be administered every three hours, the Caroid and milk continuing as before.

Two days later the child was decidedly improved. Bowels had continued rather freely, but there were few hard lumps, and the odor less. The calomel was then stopped.

Child was not seen for two weeks, when mother brought it back, saying it was "getting the same way as before." It was not in as bad a condition as previously, but indigestion was again marked. I found on inquiry that six days after I had last seen the child, the mother thought it so well that she supposed the Powders would not be needed any longer. These were now renewed, with strict injunctions to continue them after each feeding for a week, and after every second feeding for another week. Child has, at this writing, been without them for two weeks, and is strong and healthy. The eczema has almost disappeared.

CASE XVII. Four months. Condition bad. Fed on sterilized half milk. Two days ago was taken with sudden attack of vomiting and purging, accompanied by high fever, and followed by complete prostration. A patent medicine, widely advertised as good for all ills of children, had been heroically administered, and had promptly cleared the bowel. Paregoric had then been used. Mother ascribes the attack to the baby's having been given by mistake a bottle left over from the day before.

Copper arsenite, gr. 1-100, was dissolved in six ounces of water, and a teaspoonful of this was given every fifteen minutes for eight doses; after that every half hour for eight doses more; ten drops of brandy every three hours, commencing with a double dose; warm cloths applied to the abdomen and flank, and a hot water bottle to the feet. The colicky spasms were relieved, and by night the child was resting more easily. Brandy was given every five hours, and pasteurized milk cautiously started.

This agreed at first, but two days later the child commenced vomiting. It was thought well to give gr. j Powders of Caroid after each feeding. They did not seem to help, however, and during the ensuing week, Soda with the Caroid, Soda with calomel, lime water, etc., were all given.

At that time these were abandoned, and a weak formula of raw milk, lime water, etc., was given every two hours, after having been treated for ten minutes with Caroid. This was more successful, but the effect was by no means immediate. Slowly the child took to it, however, and became well enough to accept a stronger formula, which was increased every four or five days.

Three weeks later the patient was dismissed, being then in good condition.

CASE XVIII. Four months. Condition fair; somewhat poorly nourished. Breast-fed. For last two weeks child has been passing green stools, with curds and with

fetid odor, from four to seven times a day. Tongue coated; no temperature. Abdomen pretty well distended.

Twelve one-tenth grain triturates of calomel were administered at intervals of fifteen minutes; six hours later 3 j of castor oil. After each nursing, gr. ss of Caroid, the first twenty Powders being each combined with gr. 1-8 of salol.

In two days the fetor had disappeared, and also the flatulence. The plain Caroid was continued for about ten days longer. Three weeks later the child was doing well.

CASE XIX. Four months. Child in very poor condition. Breast-fed for three months, during which time repeated vomiting had been a prominent symptom. Since then various prepared foods, beef juice, sterilized and pasteurized milk have all been tried. Mother claims that nothing whatever has been kept down during the past two days.

Inunctions of cod liver oil three times a day were ordered. She was told to try a mixture of one ounce of pure milk, one ounce of cream, and one ounce of lime water, with a little sugar. The milk and the cream together were to be treated for fifteen minutes with two grains of Caroid, and the other ingredients then added. This was to be administered every four hours at first, then every three hours.

The first feeding of this was vomited almost immediately, but the second stayed down. Several subsequent ones were rejected, but as this combination was the

only thing the baby had held for some time, the mother persisted in giving it. The child was so weak, that ten drops of whiskey, largely diluted with water, were given by the rectum every four hours. On the fourth day the child retained every feeding except one. The whiskey was then injected only three times a day, and a half ounce more of milk given. Gradually this was increased until three weeks from the first visit the child was taking the full quantity of modified milk required by its age, a half grain of Caroid following each bottle.

CASE XX. Four months. Breast-fed until two weeks previously. Poorly nourished. Stools consisted mainly of curds that were ill smelling. Had now and then been green. The nutriment, since the breast was refused, had been milk and barley water, equal parts. There had been little or no vomiting, and the sole indications were for removal of the curds already within the alimentary tract, and the prevention of others.

Tablets of soda and calomel were given at half-hour intervals until ten had been taken. These were followed by 3 j of castor oil. Nourishment was then commenced, boiled water and lime water being substituted for the barley water, and gr. ss of Caroid following.

Since this was commenced, no curds have been passed. Again and again the amount of milk given has been increased on account of the child's evident hunger, until he is now taking in the twenty-four hours an amount greater than his

age would ordinarily demand. He is assimilating it at present without any artificial aid to digestion.

CASE XXI. Five months. Bottle-fed almost since birth. Fairly well until ten days ago, though always undersized. Stools have always contained curds, but only recently have become green and fetid. Child has been given a patent medicine that is said to have somewhat improved her condition. Curds are still numerous, however, and the baby did not appear to be getting full benefit of the food ingested.

A short course of calomel was advised, and the baby put on modified raw milk, with ten minims of Essence of Caroid after each feeding.

Four days after, as the first quantity did not appear effective, this was changed to twenty minims. Child has now been under observation for three weeks, and is gaining slowly, not having yet attained to the weight proportionate to her age.—By Russell Pemberton, M. D., Physician in Charge, Out Patient Department St. Mary's Free Hospital for Children, New York; Assistant at Vanderbilt Clinic, Medical Department, Columbia College.

—:o:—

There is the story of a bullying colonel who turned on one of his aides during a battle and cried: "Captain——, you are frightened! You are, sir. You are scared!"

"You're right," replied the captain, "and if you were half as scared as I am you'd be six miles in the rear."—*Ex.*

ITEMS AND NOTES.

Digestive Aid.—To reinforce digestive power within the body, it seems best to use one of the pawpaw derivatives, whose effect is independent of reaction and other circumstances.—A. L. Benedict, M. D., Buffalo, in *N. Y. Med. Times*, Sept., 1902.

An Ideal Food for the Vegetarian.—According to a note in the *Montreal Pharm. Jour.* for July, 1901 (*Medicine*), a curious plant was recently described by M. Balland before the French Academy of Science. It is termed "voandzou" and is believed to be the only plant which is known to possess in due proportions all the elements that are required for the nourishment of man. It is a native of tropical Africa and is largely cultivated by the negroes. In southern Asia it is common, but it does not grow in America, excepting in Brazil, where it is known under the name of "mandubide angola." Its nutritive portion consists of large masses enclosed in large pods like beans. When raw it tastes like ordinary bean, but when cooked has the flavor of chestnuts. They contain about 10 per cent. of water, 19 per cent. of nitrogenous matter, 6 per cent. of fats, and 5 per cent. of starch with 4 per cent. cellulose. The conclusion of Balland was that immediate steps should be taken to cultivate this plant wherever it can be grown. It is not believed that it can be successfully culti-

vated in Europe, but it is thought that it will prove an admirable food supply. The new food may contain a much larger proportion of nitrogen than any other now available in the vegetable kingdom, but it will have to be shown in the new product that the nitrogen is in an assimilable form. Substances which contain large quantities of nitrogen derived from the vegetable kingdom are commonly difficult of digestion.—*Ex.*

Pineapple.—Pineapple, owing to its active principle, bromelin, has considerable virtues as a proteid digestive. The texture of the fruit, however, is such that its undigestibility more than offsets this virtue. Dr. Wyatt Wingrave, however, finds that the expressed juice has a powerfully solvent action upon plastic exudate, such as diphtheria membrane. This can be demonstrated *in vitro*, and though, owing to the shortness of contact, its solvent action on membrane of the throat is necessarily slight, he finds that it exerts a decidedly softening effect on the stringy exudation, so as to admit of its easy detachment.—*Ex.*

A Preparation of Predigested Beef and Rice Suited to the Weak—Digestion.—The following comes to us from Dr. Charles S. Rottner, of Philadelphia, for the first time. The subject is one which is so practical that we have secured further contribu-

tions upon the line of Diet for Invalids, all of which are new.

TO PREPARE RICE.—Take a convenient quantity of rice, weigh it and boil in a farina boiler for two or three hours. Then break up the grains by beating, or better, by passing through a colander. To 1 ounce of rice, take two grains of Bana-Diastase which has previously been dissolved in a little water. Add the diastase to the rice and keep warm, but not hot. In two hours the rice will have become soft and pleasant to taste. Season with salt.

TO PREPARE MEAT.—Take $\frac{1}{4}$ pound prime, fresh meat free from gristle and fat. Boil or broil the meat, adding salt while cooking. Chop and cook meat fine and add 5 grains of Caroid previously dissolved in a dessertspoonful of water, mixing thoroughly. Allow to stand 1 $\frac{1}{2}$ hours in a warm room, when the meat will be found reduced to a pulp and somewhat bitter. Mix with the rice prepared as above, and bitterness will be removed. Salt to taste.—*Chicago Clinic*, July 1902.

SOMETHING JUST AS GOOD.

There's a druggist on the corner of a street
that's near at hand,
(There are other druggists like him scattered
o'er this honest land),

In a store that's large and handsome, with a
smile that's soft and bright;
And you'll hear him, if you listen, say this
same thing day and night:

"No, we haven't Fairchild's pepsin, but try
this, if you would,
And take my word upon it, it is every bit
as good."

"We are out of Johnson Dressings," you
will hear the druggist say,

"But I have a line that beats 'em and they're fresh this very day."

"What? Bovinine? Take my advice, I really wish you would, Here's one that costs a trifle less, but every bit as good."

"Yes, Maltine? Sure, we have it here, but this is quite 'q. t.', I have a malt that knocks it out, made 'specially for me."

And if you'd follow this same man to his prescription place

You'd see a mercenary smile light up his shaven face,

And you would want to jolt him and you'd strongly wish you could,

As he fills the doctor's orders with "something just as good."

He has home-made Antikamnia and Caroid of his own,

And Hunyadi Fakos and "phoney" Chloretone,

And Arsenaurol that he makes, and Pepto-Mangan too;

Ah, 'tis with these things "just as good" he's robbing me and you.

I wonder if, when life is past and to the skies I go,

To be rewarded for my deeds of virtue here below,

When Heaven I ask of Peter there, with cloak of white and hood,

He'll say, "Why, Heaven's full to-day, but here's something just as good."

—From the *Chicago Clinic*, Sept., 1902.

The Saliva and Gastric Digestion. — G. Sticker (*Volkmann's Samml.*, 297; abstr. in *Fortschr. d. Med.*, 1888, No. 2) concludes from his observation that the notion that the salivary secretions play no part in gastric digestion is erroneous; that, on the contrary, the presence of saliva in the stomach has a direct effect in promoting the secretion of gastric juice. The deduction was made from a case which presented a marked deficiency in the salivary secretion, and in which an examination of the contents of the

stomach proved that the gastric juice was diminished in quantity, and proteolysis impaired. By administration of jaborandi the saliva was increased in amount and the digestive powers restored. Since it is not known that this drug has any effect upon the secretion of gastric juice, it was inferred that the restoration of the latter was due to the entrance of saliva into the stomach. A simple experiment seemed to bear this out. The white of three eggs was introduced into the stomach of a man, and the contents of the viscus withdrawn at the end of two hours. On one occasion he was forbidden to swallow saliva, and on another allowed to do so. It was found that in the first case the stomach still contained intact albumen as well as undigested starch, and the gastric juice yielded a very feeble peptonizing power, while in the second digestion had been entirely effected. That this result is not due to an assumed increase in peptogenic substances in the blood by the conversion of starch into dextrin, but to the direct influence of the saliva, was shown by withholding starch in the above experiment, when it was shown that albumen was normally digested as long as saliva was suffered to pass into the stomach.—*Lancet*.

Fruits for the Sick.—There are many times when the sick should not eat raw fruit, but can take cooked fruits. Any and all fruits may be cooked—and in many different ways, all attractive. Compotes are fresh fruits stewed;

they are usually made by first making a syrup of three and one-half cups of sugar and two and one-half cups of water, and boiled five minutes. The time must be counted from the time it actually begins to boil. When it is boiling, drop the fruit in carefully, a few pieces at a time, so that they will not break; cook until tender, but firm enough to keep their shape; remove with a skimmer; arrange daintily on a dish, then boil down the syrup until thick, then pour it over the fruit. Let it cool before serving. Apples, pears, peaches, apricots and oranges may all be cooked in this way.—*Dietetic and Hygienic Gazette*.

—:O:—

OPINIONS OF OTHER JOURNALS.

(Abstract from a Lay Paper.)

Concerning proteid Prof. Sir Michael Foster writes thus: "Proteid matter we must have always. We might, indeed, manage to live on proteid matter alone, for it contains not only nitrogen, but also carbon and hydrogen, and out of it, with the help of a few minerals, we might renew our whole blood, and build up any and every part of the body."

Dr. Robert Hutchinson says: "Proteids alone are able to fulfil both the functions of a food. A diet rich in proteid seems to increase one's power of resisting disease. It seems to be necessary for the muscles and blood."

Food has two functions. First of all, it has to provide fat and heat, as paper, wood and coal provide heat for a fire. Secondly, it has to repair waste, and to make and renew the cells of the body.

It is a great error to compare food closely with fuel. Look at the fireplace for a moment. It consists of iron work as well as of coal. It is not like the human body.

Let the fire in the fireplace burn out and the iron remains iron. Let the fuel in the body burn out, and the body proceeds to live upon itself.

To the two functions of food mentioned let us add a third, to get rid of waste. This is, I believe, not to be found in any "scientific" book on the functions of food. And yet it obviously belongs to certain chemical salts to gather up the waste products and help to remove them. The acids will be removed by the alkalies, to some extent. But we will leave the salts for the present and confine ourselves to proteid.

Proteid, if it has its proper salts, performs a double function as food; it both provides fat and heat and also repairs waste and makes and renews the cells of the body. Now fattening and heating material, such as oil and starchy foods, cannot perform this second function.

They cannot repair waste and make and renew the cells of the body. The most they can do is to save proteid. We hear that a penny saved is a penny gained; that is well enough, and the fats, etc., may be said to save pennies.

But unless there were proteid to be saved there would be no pennies to be saved. The proteid provides the pennies which the fats may help to save. Therefore proteids are indispensable.

How much proteid is indispensable no one can possibly tell. It is generally held, however, that about four or five ounces are enough for an average person on an average day.

All the experiments that have been made hitherto seem to me thoroughly unsatisfactory. When the Hindoo runs his ten miles after ten miles, and eats nothing all day except his evening meal, a handful of rice, and when he continues this day by day; and when we find that this handful of rice contains nothing like four ounces of proteid, we begin to doubt whether the verdict of "science" is not altogether wrong.

But yet, in order to be on the safe side, not to live upon one's self and to use up one's own cells, it may be safer to take the four and one-half ounces daily. To live upon one's self is to live upon a stimulating diet, for flesh food is stimulating.

This is one of the reasons why the person who starves often feels exhilarated as the fast continues. He is living on himself,

and in more senses than one he is pleased with himself.

Proteid does not merely form cells; it also gives us some fattening and heating material; that is to say, those elements which burn in the fire. As Sir Michael Foster says, it would be uneconomical for us to get our fattening and heating materials from proteid alone; it is better to get them from another source.

But, whatever may be the value of these other foods, we must never forget that the first rule is to take too much proteid rather than too little. This is especially important for children who are growing, and who, besides, take more exercise than their elders. They need, in proportion to their weight, more proteid than we do.

Further along in this article figures are given showing that among the foods with high values, besides the flesh foods, are certain kinds of gluten, cheese, peas, lentils and nuts. The brains come below them. Last of all come the leaves and stalks and roots; such as cabbages and potatoes.

It is said that we need about one part of fattening and heating material to four or five parts of proteid. If, however, a person be fat already then there is no need to add more until the extra fat has been reduced.

Of all the fattening and heating materials, it seems that oil is the slowest; that is to say, the most lasting. Oil can be had from butter, or from nut products, or in the ordinary form of salad oil. This latter is very hard to get fresh.

Starch seems to come next, and to give energy quicker than oil. Sugar comes next, as giving it quicker still. "Scientists" seem to be generally agreed that some oil is necessary for health, but oil is rather expensive, and its necessity has not been proved, though it can be extraordinarily valuable to the system in many ways, whether it be applied internally or externally.

Starchy foods, especially as they are usually prepared and eaten, are apt to ferment, and to clog the system; ordinary sugar ferments also; and acid fermentation may be very disastrous to us.

In foods it is more important to know how much we digest and assimilate than how much we actually eat; and here, as elsewhere, the personal element is all-important. I know one food which gives

full advertised value in certain cases, and next to no value whatever in certain other cases. Part will depend upon what is taken with the food.

It is said that tea may prevent the digestion of 33 per cent. of proteid, and of 33 per cent. of starch. That is a serious consideration. A food which contains 30 per cent. of proteid and 30 per cent. of starch may perhaps only give 20 per cent. of proteid and 20 per cent. of starch if we take tea with it.

Cooking also alters the value of foods by removing or adding moisture. Raw beef contains about 20 per cent. of proteid; roast beef about 34 per cent. of proteid, having less water. Raw haricot beans contain about 23 per cent.; cooked haricot beans about 4.4 per cent., having more water.

Various breads and flours differ almost incredibly from 20 per cent. of proteid in the driest crust to 1 per cent. or less in the wettest crumb!

Roast beef, medium fat, gives 20 per cent. proteid; mutton, 14.5; veal, 17; sausage, 12.28; fresh fish, 10.5; butter, practically none; whites of eggs, 12.6; yolks, 16.2; wheat, 11; oats, 10.9; oatmeal, 14.2; rice, 7.2; white bread, 6.5; macaroni, 10.89; dried peas, 21; lentils, 13.3; potatoes, 1.2; turnips, nine-tenths of 1 per cent.; onions, 1.6; lemons, 1 per cent.; dates, 4.4; figs, 5.5; prunes, 2.4; raisins, 2.5; chestnuts, 10.1; walnuts, 15.6; filberts, 14.9; sweet almonds, 24; dried cocoanut, 6 per cent.

EUSTACE MILES.

[N. B.—Cheese, which is omitted by Mr. Miles, contains 33 per cent. proteid. His estimations are in the main practically correct, with the exception of egg, which is 18 per cent. proteid.—EDITOR.]

—:o:—

"Now, if you simply believe your tooth is not aching," said the Christian Scientist, "your toothache will depart."

"That might be," replied the man with the swollen jaw, "but I can't believe it."—*Ex.*

It costs more to be stingy than it does to be charitable.—*Ex.*

THE DIASTATIC PROPERTIES OF THE BANANA.

It is an axiom that nature has provided all plants as well as animals with such digestive ferments as may be necessary to convert their complex food constituents into simpler substances fit for assimilation. Proteolytic, amylolytic, curdling and fat-splitting ferments are supplied to plants in proportions as required. Thus, plants, fruits and seeds composed largely of albumen are most conspicuous for their secretions of proteolytic ferments, while those containing starch in abundance are conspicuous for their secretions of diastase. Of the latter class is the banana plant. A single banana plant frequently produces 150 pounds of fruit mostly all starch, to convert which into assimilable products requires a relatively enormous amount of diastase, which nature supplies. The plant contains a juice called "stain" or "dye," in which is found (if taken at the proper season) an abundant supply of diastase, which does not differ in action from the diastase obtained from malt or from animal sources, except that it is relatively vastly more active, probably on account of the greater purity of the product which can be isolated from this plant as compared with that obtained from other sources. The cheapness and great excellence of the diastase produced from the banana must commend it to all consumers of this ferment.

The normal ratio of the carbohydrates to proteid matter in the

average daily diet is about 4 to 1; so that reasoning from analogy, it would be fair to conclude that the work to be done by the digestive ferments which effect transformation of the carbohydrate material into diffusible and assimilable forms is four times that of the ferments which deal specifically with proteid matter. It is now conceded that diastase is constantly present in the blood, lymph, cellular tissues and fluids of the body, and that, whenever a lessened activity of the ferments of the blood occurs, diminished powers of resistance on the part of the economy in general is sure to follow. After long continued febrile affections, an abeyance of function of the secretory glands is one of the most pronounced symptoms. Failure to supply diastase to the recovering patient, prolongs convalescence until the restoration of function of the secreting organs is largely or wholly established, and it is in the convalescent stages of disease that the most satisfactory results from the use of this ferment have been obtained. Probably the principal reasons which have caused some physicians to abandon the use of diastatic preparations in the past have been the variation in digestive power, the thick, gummy consistence and the unsightly turbidity of the finished product. This disfavor is not to be wondered at when we consider that it is possible to obtain a preparation of definite diastatic power from the vegetable world which lacks these objectionable features.—

[EDITOR.]

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